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The Manufacturing and Construction Journal of the Textile Industry

COTTON

MARCH 1927

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KEYSTONE COPPER STEEL

Carolina Metal Culvert Co.

Salisbury, N. C.

Vol. 51.
Number 5.
$1.00 a Year.

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Published monthly by
W. R. C. Smith Publishing Co.
Dalton and Atlanta, Ga.

This new cloth *deserved* new selling policies

how Kaumagraphs helped to effect them

Based on an interview with Mr. J. D. Hawke, Catlin & Co., Inc.

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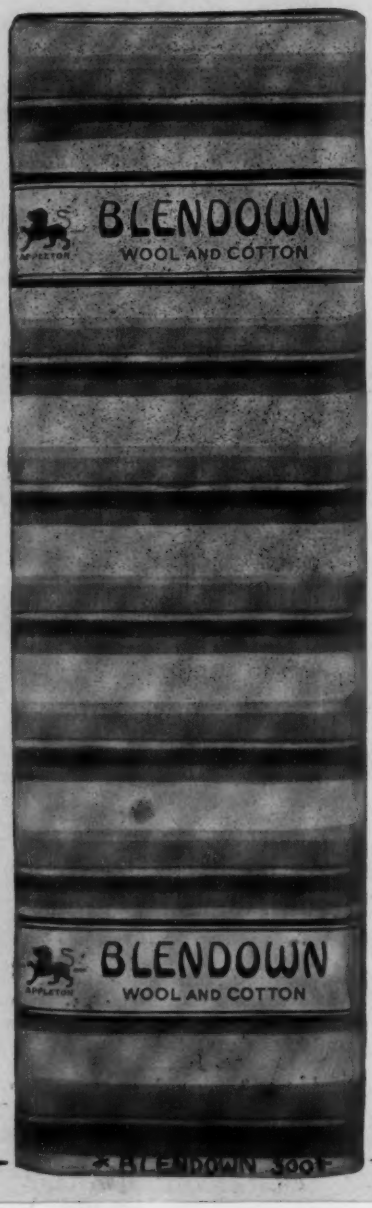

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COTTON

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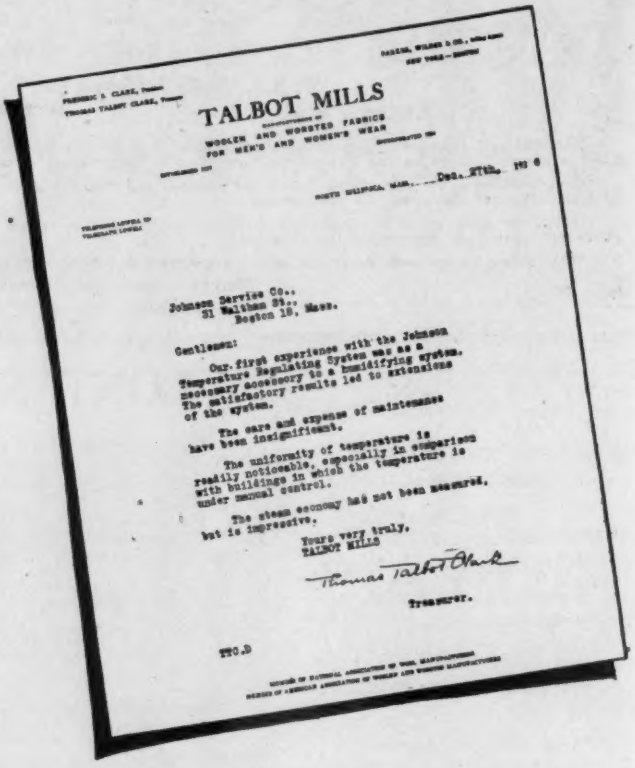

TALBOT MILLS

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NORTH BILLERICA, MASS., Dec. 27th, 1926

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Thomas Talbot Clark

Treasurer.

TTC.D

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—low maintenance
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—steam economy

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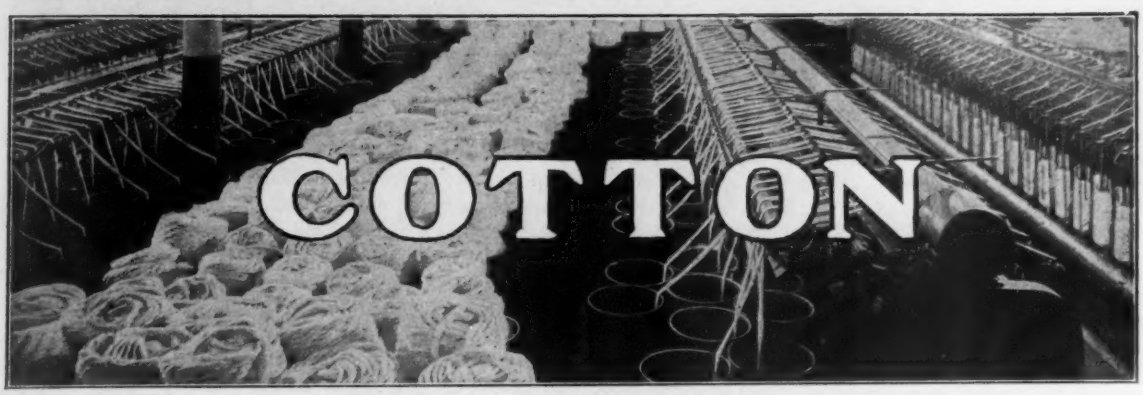


March, Nineteen Twenty-Seven

Some Foreign Trade Trends.

The average American still views the subject of foreign trade as something removed, remote, prosaic and detached from his own personal interests and concerns. Yet his prosperity always has depended more on this than upon any other economic factor. Such "good times" as have been enjoyed in recent years owe chiefly to the increased volume of American business carried on abroad. This volume has held up in despite of the fact that for five or six years past the volume of all the world's trade between nations has averaged less than that of pre-war times and only recently has regained its pre-war size.

Prior to the war our foreign trade amounted to from $3,000,000,000 to $4,000,000,000 a year, with a trade balance in our favor of about $450,000,000 a year. This last was excess of exports over imports. It was absorbed by earnings of foreign investments in the United States, immigrant remittances, tourists' expenditures abroad, and payments for services, such as in ocean shipping, rendered us by foreigners.

Our foreign trade now amounts to about $9,000,000,000 a year. The increase in volume has not been nearly so great as that in money value, which has been affected by price changes. The volume increase is perhaps 50 per cent above pre-war. The balance in our favor last year was, in money terms, $378,000,000. In terms of actual goods it was considerably less than the pre-war average. It is less because foreign investments in the United States have been extinguished in most part, while American investments abroad now are larger than ever were those of foreigners in the United States. Restriction of immigration has curtailed the volume of money remitted by immigrants to relatives or for investment in Europe. Tourist spending abroad is much greater than it was prior to the war. But we are spending less for shipping services rendered by foreign concerns.

Thus the margin between the value of exports and imports—which twice in recent times has approached a billion dollars a year—is narrowing. It is now only about 50 per cent of its average since the war. But for the fact that American money has continued to pour into foreign investments at a rate of about a billion dollars a year, the balance would now be, no doubt, against us— as it quite probably will be, in any event, within a few years.

That is to say, our position in world finance now tends more towards increase of imports than of exports. In terms of quantity the change has practically come about. We brought in more tons of goods in both 1922 and 1923 than we shipped out; in 1924 the movements in and out were about the same; in 1925 and 1926 we shipped out slightly more tonnage than we brought in. This was owing chiefly to increased exports of raw cotton.

The change bodes no ill necessarily for American commerce or prosperity. It owes in some part to change in the character of goods exported. The proportion of manufactured goods sent abroad has jumped from around 30 to more than 40 per cent. This means an upward trend of the per ton value as well as the labor and potential profit in the average ton of exported goods. The crude materials proportion of exports has declined substantially. That of foodstuffs, both crude and manufactured, are about the same, though there was a falling off in them last year. The exports of semi-manufactured goods compose a smaller part of the total than they used to.

Conversely, crude materials constitute an increasing proportion of our imports. The proportion that is of manufactured products has been declining. The great increase in crude materials purchases abroad owes in most part to crude rubber and raw silk. We are now bringing in about a half billion dollars worth of rubber every year and nearly $400,000,000 worth of silk. Our raw silk imports now have a value almost half that of our cotton exports. In fact, we are sending abroad for rubber and silk about four-fifths as much money as we bring in from abroad on account of both cotton and cotton manufactures exports.

In terms of money value, our exports of cotton goods fell off last year, being now below the average for the period of 1921-25. They are still substantially above the pre-war average. Imports of these goods also have been falling off, in terms of value, dropping from an average of $86,600,000 for the 1921-25 period to $67,200,000 in 1926. Despite our dominance in the realm of raw cotton production, we are sending nearly $50,000,000 a year to foreign lands for unmanufactured cotton.

Both imports and exports of wool manufactures have been tending upward, though imports of these fell off slightly in 1926.

American foreign trade on the whole seems to be in a healthy condition—much healthier than is that of all the world.

But that of other countries is improving; it shows signs of recovery from the maladies of war. What effect this

will have on our trade is yet to be demonstrated. After all, much of our gains in the realm of foreign trade still are mere "takings over" from other nations affected more disastrously by conditions brought about by the World War. The holding of so large a part of the gains owes, to date, chiefly to continued lending of American money abroad. That is, we have been selling in much part, as we did during the war, on credit.

We are more dependent probably than ever before on foreign trade, both in the exporting and importing senses. It now comprises some 15 to 20 per cent of the volume of our total commercial operations.

Expanded production is tending to yield increasing surpluses of American goods which must be disposed of abroad. Our raised standard of living is sustained in much part by products brought in from other lands, notably ones in the tropics.

Federal Tax Stays Put.

Congress' refusal to even consider President Coolidge's suggestion that a "dividend" in the form of a 10 to 12 per cent refund be declared on last year's income taxes, and the evident failure to consider at the short session any tax reduction measure, means no relief of any kind from Federal taxation during the present year.

The subject, however, has been rather consciously postponed instead of handled, as it might have been at the short session. Taxes probably will be to the front again when Congress meets for the long session in December, next. With a presidential campaign then impending all sides are apt to be rather eager for "showings" in the way of reductions and adjustments. And some of both will be made.

What is being led up to, in all probability, is another tug-o'-war over the tariff. If the farm situation continues as at present, the farmers of the West sooner or later will abandon their schemes of direct relief and array themselves on the side of low customs duties. If they can't lift themselves by their own bootstraps they can bring others down, or they will believe they can.

The tariff fight may be deferred, however, until after the next national election. Price levels then may differ considerably from present ones.

Why Quibble?

It seems that the "third term" threat, bugaboo, tradition—or whatever it is—will be conspicuous in pre-campaign and possibly the oncoming campaign discussions. The prospect of Mr. Coolidge running again for the presidency brings it to the fore academically and if he does run again the "third term" phrase will be the one heard most often during the contest. And over it there will be quibblings, both for and against, that would stall the minds of the logicians of old. Is a part of a presidential term a term? Does the unwritten law in the premises hold that the same man shall not be sworn in as president more than twice, or shall not be elected more than two times? Does the vice-president on succeeding to the presidency become president or only the acting executive head of the nation? Is there such a thing as an unwritten law in the premises? If so, does it hold that no man shall serve as president more than two full terms, or only two full terms, with, possibly, a fraction of a term in addition?

Aside from the question of the desirability of having Mr. Coolidge again as a candidate or for another four years, after March 4, 1929, as president, as most business men concede, it would seem that next year is a good time for clearing up all doubts anent the meaning and worth of the "third term" tradition. And this probably will be done if Mr. Coolidge decides—as he may have done already in his own mind—to run again. It is unlikely that he can be beaten for the Republican nomination; if there is any such danger it is unlikely that he will seek it. His reelection might or might not be taken as contravening the no third term precedent. But it probably would bring about a Constitutional fixation of whatever rule the people believe should hold as to the Presidential succession. His running alone might bring this about.

Whatever the strength of the precedent that hitherto has been followed, the national will as to whether the Presidency should be in the hands for any number of terms of a single man never will be shielded from obscurantism and possible contradiction until it is set forth in the written laws. The Presidency carries with it such vast power as may be used to offset the common will in the particular instance.

It is quite doubtful if a President should be qualified to succeed himself even once. A one-term limitation might not be good so long as the term is for only four years. But an extension of the term to five or ten years would remove that objection.

The Urbanite Farmer.

An economist in the U. S. Department of Agriculture says that around 25,000 farms are now occupied and operated in New York State and New England by urban workers. These do not include the country places of persons of means, nor mere suburban ones with kitchen gardens or poultry yards. They are big enough and yield enough to be ratable as actual farms. The owners work in nearby towns and cities, flivvering over good roads from the main jobs to homes, in real country, that are maintained in much part by immediate production. The farms range from one to fifteen and twenty acres in size.

This kind of small farming has been carried on near cities in the South for a long time. Natural conditions in this region abet it much more than in the cold and barren regions of New England. Snow and ice seldom interfere with travel on the roads. Farm work can be pursued in the open throughout the year, during all of which something can be grown. In fact, manufacturing industries in the South are located predominately in the fields, instead of solely in congested urban haunts as in the Northeast. It is possible for thousands of workers in factories—notably cotton mills—to live on small farms within walking distances of their main jobs. Most of them have spare time, and members of the families of many have time, which could be given, with both physical and economic—not mentioning the spiritual—benefit, to side line work in growing things to eat. There always is a good market at the door for surplus production. It is doubtful if anything makes more for stability, contentment and general well being than does a happy blending of farm and industrial work and living.

Side line farming might be encouraged for the advantage of all by employers of industrial labor in the South, where everything favors it as no where else in the country.

Checking Up on Distribution.

Arrangements have been made by private and public agencies for taking an experimental census of distribution in a few typical cities of the country, in order to get basic data for calculating the cost and worth of a national census of that kind. It is a timely and meritorius undertaking.

There are almost no worth while statistics of retail distribution, to which is attributed many of the economic ills and shortcomings of the time. Without complete statistics almost nothing can be done towards intelligent correction of its faults. A census of manufactures is taken now every two years. One of agriculture is taken every five years. Even the decennial national census connotes little of retail stores. We know all about mining, most of what is to be known about transportation, but of many intermediary links between producers and consumers we know almost nothing of a sound statistical kind. We know, however, that the cost of the spread is increasing. If it now were only what it was a dozen years ago retail prices would be 10 to 15 per cent lower. And it is retail prices which the ultimate consumer pays, and it is the spread between them and ones the producer gets which absorbs the bigger part of costs.

Congress should provide for the taking of at least one complete census of the distribution of the country.

Methods and Cost of Roll Covering

By W. C. HAMES.

The purpose of this article is to show the importance of a good roller, and to improve, if possible, the art of covering rollers; as roller covering, when done right, is an art, if one considers the part played by leather rollers in preparing and spinning of the cotton; as it must be remembered that the sliver from its introduction to the preparatory machinery, the drawing frame, is treated by leather-covered rollers until it passes through the spinning frame.

The manager of a large spinning mill, when asked what he considered the most important adjunct necessary to the production of good yarn, replied: "As a result of my experience in spinning, I have for many years held the opinion that leather rollers play a greater part in the production of good or bad yarn than anything else in the mill. You cannot take too much care in keeping up the condition of the leather rollers, as you will be amply repaid in the production of good yarn."

Personally, I think there is no mill so small that it should not have a roller covering department of its own, as a mill with its own shop secures a closer contact between the carding, the spinning, and the roller department. The overseers are enabled to catch and remedy faulty work caused by the rollers, and the roller coverer will also be able to note certain defects of the machinery on the returned rollers. Every roller coverer has rollers sent to him that do not really need covering, and if he is working for several mills, he has no interest in them other than recovering, therefore the mills are the loser.

The covering of drawing rollers, in my opinion, has not been studied enough in proportion to the important work that they have to perform. To properly cover these rollers, considerable skill and knowledge is required, the result of which is always visible in the yarn, the roller covering bill, and the cost account.

The best workmen are the most valuable and cheaper for the mill in the long run; and the best skins and cloth, though relatively high in price, will give the best results, with an annual decrease in the cost of roller covering.

All rollers sent to the shop for recovering should be examined; the importance of examining and classifying the worn rollers cannot be stressed too much. The condition of the rollers will often give a key to the condition of the machinery from which the rollers have just been removed. It is only with worn rollers that the effect of putting on cots a trifle too large in diameter can be traced. An abundance of slack leather among the rollers will show the necessity of smaller cots. Rollers with deep grooves in them show unmistakably the effects of bad traversing by the roving guides, the roving traverse probably sticking. Often the traverse is made so that it does not sufficiently cover the leather surface, and hollowing quickly results; this is an indication that a longer stroke on the traverse could be used with a greater efficiency and economy. Many times rollers will be found that do not need recovering; these can be calendered and returned to the mill or department.

The first operation towards recovering rollers is to clean them perfectly. They should be dumped into hot water so as to soak off the worn leather and cloth, and then placed in a solution of alkali to remove the oil and grease. After this they should be rinsed in clean hot water and allowed to dry. They are then ready for the covering. If they are not absolutely free from dirt and grease, trouble will be had afterwards by the cloths slipping, thus causing the leather to twist.

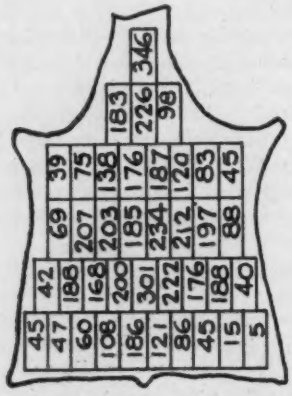
Leather alone does not provide enough cushion, therefore a covering of woolen cloth is first put on the roller, and the leather cot is drawn on over this cloth. The life of a roller, in a large measure, depends upon the kind of cloth used and the way it is put on. The essential points to observe in roller cloth are the quality, firmness, and thickness of it. A soft, pliable, fuzzy cloth, which is the outcome of using inferior wool or waste, will soon groove or pack down and lose its cushion effect. On the other hand, a hard, boardy cloth will have little, if any, cushion; a good many fluted rollers have been traced to hard, boardy cloth. Low priced roller cloth is false economy and often the best roller leather is condemned and wasted because of its use. The cloth, in preparing it, should be cut into strips the width of the roller to be covered and blocked with a bias cut. It should be cut about the thickness of paper larger or longer than the roller is in circumference so that, when put on, it will felt down and make a seam that cannot be

felt with the hand. A cloth cut much too large will soon work loose on the roller and powder up, thus you lose the cloth and the leather as well, and also produce bad yarn.

A glue or paste is used to stick the cloth onto the roller. In England a paste is used to a large extent, but in this country the glue seems to be preferred. However, the making of iron glue has been neglected in a great many shops, and in most of them the men have had no experience in the making and mixing of glue. A thorough understanding of the sources and manufacture of glue is of practical importance to the roller coverer. Glue is an organic substance with adhesive properties, and is obtained from the hides, bones, sinews, tendions, and intestines of cattle, sheep, deer, horses and a few other animals. It may also be produced from the head, bones, sinews, and swimming bladder of many species of fish.

Glue is not formed by nature, but is the product of the action of water on nitrogenous animal tissues. In preparing to make the glue, the animal matter is boiled and the liquor removed and dried. The boiler is heated by direct firing. Test quantities may be run off for examination, and when a sample is found, on cooling off, to form a stiff jelly, it is ready to draw off. The first boiling requires about eight hours. When the liquid is run off, more water is added and the boiling continued. Six to eight boilings may be made, but the last boilings will produce weak glue. The glue solution from the boiling process is run into wooden troughs or coolers, in which the solution sets into a firm jelly. After setting, a little water is run over the jelly and it is detached from the cooler and cut into slices of the thickness desired. It is then placed on galvanized or linen nets to dry thoroughly.

Several things should be looked out for in the glue. Small white bubbles near the surface show signs of decay. If in doubt, moisten the glue and a sour odor will be given off



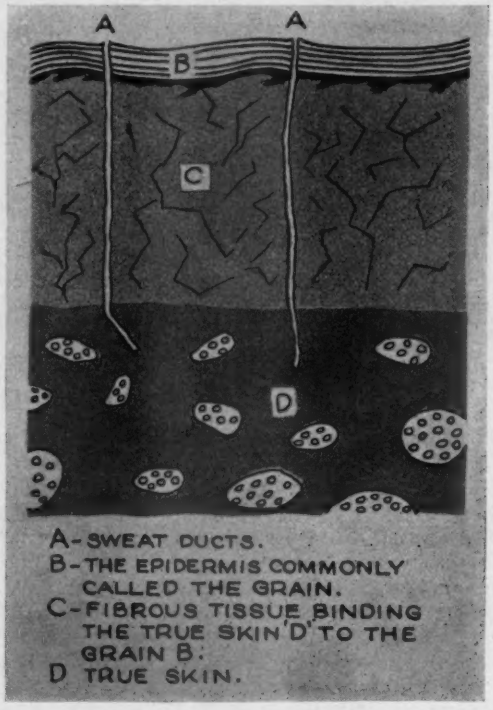
if the glue is spoiled. Bubbles within the glue need not be noticed. The quality of the glue can be determined by taking a small piece of it with the thumbs and fore-fingers and bending it. If it is good glue, it will bend without breaking, but a clean break indicates that the glue is of a brittle, low-grade quality. The humidity of the room should be taken into consideration in the making of this test.

In preparing glue to be used on rollers, it should be soaked in *cold* water from ten to twelve hours before melting. If it is soaked in warm water, the glue will melt on the outside and form a film between the melted and the firm glue, and then that glue on the inside cannot be melted without considerable heat, thus injuring its quality. A temperature of 130 to 150 degrees is all that is needed to melt it to a working consistency.

The following receipt would make a very good roller glue:

Five pounds of good glue, one quart of cold water, and one quart of vinegar. Soak from ten to twelve hours, then apply the heat. When the mixture has thoroughly melted, add five ounces of Venice turpentine and ten drops of carbolic acid, then pour the mixture into a flat pan and use as needed.

The next step in covering the roller is the preparation of the skins, The choice of the skins is an important



Drawing of An Enlarged Section of Roller Leather.

factor, both from the practical, as well as the economical standpoint. The first leather used for roller covering was a white alum-tanned sheep skin which was used by Arkwright on his first spinning frame rolls, but the skins used now are oak-tanned. The first thing a tanner does is to select the skins suitable for roller leather, as only certain classes of pelts are considered for this purpose. Though most of the wool has been removed, there still remains a fine undergrowth of hair which can only be gotten rid of by soaking the skins in lime water for a certain length of time. They are then put into chemical baths to neutralize the lime. This is expelled from the skin by an operation known as scudding, which is a very particular process, both chemically and mechanically, as a defect from this operation cannot be remedied. A great many hollow, loose skins are the result of such defects. When properly cleaned the skin is then tanned with an oak bark. All surplus flesh and fibrous tissue is shaved from the flesh side until the skin is level throughout, and then they are glazed by a machine.

Roller leather is made of several kinds of skin; sheep,

lamb, goat, and calf being the principal ones. The finest are the Persian lamb skins, which are used by a large number of fine yarn spinners. In the selection of skins the price and size should not be the only guide, as the buying should be done cautiously and different skins tested side by side, and watched to determine which skin gives the best results. A quanity should be purchased of the two best skins and a more elaborate test made of these.

To make the leather into cots, it is first stripped up into the required widths, allowing a trifle for the ending or burning. The skins should always be stripped from head to tail, as shown in the sketch, and never across; the natural direction of fiber growth being from head to tail. The strips should then be separated into three piles; the flank, the sides, and the center strips. The leather is then ready to be cut into sizes for the rollers. This operation is the most important one in the roller shop; because, if the cot is not beveled correctly a perfect cot cannot be cemented. If the pieces are cut too large or too small, the cot will be too slack or too tight, as the case may be. The angle of the bevel is an important thing, as it should be neither too wide nor too narrow. In the first case, a wide, hard line, caused by the cement will result, and in the latter case, the cot will probably burst when drawn on the roller. The knife placed at a 12 degree angle will cut the skin to the best advantage, and it should always be kept with a keen edge so that it will make smooth, clean-cut laps. The leather should be placed with the grain side down when beveling, as it will produce a cleaner edge when it is so placed. The cots should then be stamped with a small arrow to indicate the direction of the lap.

The next operation is the cementing of the leather. Only the best grade of Russian isinglass should be used. It should be dissolved in water with a few drops of alcohol added to preserve the cement; on hard leather a few drops of acetic acid may be added. The leather is placed under the spring of the cement bar and held with the left hand, the cement being applied with a small, knife-shaped stick. The beveled edges are quickly placed together, being, careful that they are placed exactly right, and the top clamp is brought down on the leather for a few seconds. After the cot is dried, it is ready to be drawn onto the roller.

The rollers are then carried to the drawing-on machine, on which the wires should be of the thinnest material and not too long, or there will be difficulty in drawing away the wires from the cot after the latter is mounted. The wires should be mounted so that, when opened out by the roller, they will lie evenly on its surface without overlapping; as such overlapping will put an undue strain on the leather at that particular point and is apt to crack the grain or rupture the fiber of the leather. The wires should cover about three-quarters of the roller, as this will give sufficient space to guide the cot onto the roller, and, at the same time, will leave enough leather unsupported by the wires for the operator to grasp it when he wishes to remove the roller. Violent or jerking drawing-on should be avoided, as there is danger of breaking or cracking the grain of the cot.

The cots should be placed in a damp room, about 75 per cent relative humidity, three or four hours before drawing-on, as this opens the fibers and allows the leather to stretch more easily without cracking the grain.

The next operation is the ending or burning of the ends to seal them up. This is done on a speed lathe, using a hardwood stick to burn the leather. Much depends on careful burning, as rollers may be completely ruined by carelessness in this process. The operator should be careful to apply the stick immediately over the edge of the cloth and work outwards with a downward pressure. Then, to make a neat job, the ends should be trimmed with a knife. The rollers are then ready to be calendered. This process can be seen to be practically indispensable, if one considers the various stages the leather goes through; it will receive a certain amount of damage, even though it be in the most skillful of hands. The rollers are calendered between two hot plates or rollers. Flat places, scaly surfaces, and other imperfections are ironed out and a polish is put on the surface of the skin.

There are many complications which may set up in the covering of rollers which might be puzzling if they are not fully understood, and the roller coverer does not know the remedy for it. Some of these might be outlined as follows: A hard, boardy skin is caused by the manufacturer introducing some foreign substance into the leather. This skin should be rejected. Looseness of the skin is caused by two things: first, when the hide is taken from the sheep, it is salted down and shipped to the tanner, and during this time it may start decomposing, so that when the hide is tanned it will show up as a loose skin; second, if the rinsing process is not done thoroughly, when the skin is taken from the lime bath and placed into the chemical bath, you will have a loose skin as a result. The presence of ribbiness in the skins may be due to a physical defect of the sheep, or sometimes to the careless handling of the manufacturer. Licking may arise from the presence of too much humidity in the room, or the operator permitting mineral oil to get on the roller. It may also be caused by the presence of fine hair, or from the grain being ruptured with small cracks. Fluting is occasioned by a number of things: lack of oil, the weight lever rubbing against the front or middle steel roller, the cot being drawn on too slack, the cushion of the cloth being lost, or the rollers being of such diameter that the fluted steel roller meets the leather roller like a large and small cog. Dust or dirt in the cotton, or mineral oil getting on the roller will cause the rapid destruction of the grain of the leather. There are more rollers ruined in the mill by the use of too much oil, thus causing the leather to rot and lick, than from any other cause.

In conclusion, I might answer a question that was asked in a recent number of COTTON, it was "Is it practical to pay for roller covering on a piece work basis?" In a mill that does its own rolling covering, I think it impractical to pay for covering the roller on a piece work basis, as a mill shop is different from a job shop in which they do nothing but cover rollers. A mill shop has numerous jobs to attend to such as tending to all belt work, covering scavenger rolls, making loom straps, and covering binders. The labor cost of covering rollers is the other item I wish to consider in answering this contributor. The cost to cover 1000 shell rolls would be about as follows: cleaning and putting the cloth on the rollers, $1.75; cutting the cloth, cots, and cementing, $3.50; drawing-on and burning the rollers, $2.50; thus making a total of $7.75 per thousand.

"Making up for lost time doesn't restore it."

Economy Constants—A New Stunt in the Short Cutting of Textile Figuring

By R. A. SONIAMAN.

Every mill man knows—or should—the value of constants in mill calculations. Textbooks and articles on mill figuring abound with examples of them. And yet, as is the case with many other things, there are some undeveloped points about the use of constants that one individual may work up which may prove of assistance to others who have similar problems to face.

Undoubtedly, every capable executive has in his notebooks his own made up tables of production, yardages, running times, quantities of doffing, and so on, based on certain efficiencies, certain speeds, certain numbers of units, and certain numbers of hours.

And every such man can recall the feeling of dread when he realizes that owing to a change in any one of the many conditions cited, he will be obliged to change his data. It was because he was often up against just these conditions that the writer sought after and worked up the method of making the changes as given in more or less detail in this article; and he believes that, if rightly used, the system of constants described will take the irk out of the work of making the foregoing mentioned changes.

The constants in question are most simple and may either be factors or divisors. Furthermore, it is not necessary to be acquainted with higher mathematics to understand how to handle them; just a little application, and the mastery of them is complete. The economy constants —as the writer likes to term them—are then at one's finger tips for life.

Now, to diverge a bit, it may appear superfluous to urge the use of constants in an age when the art of short cutting in all kinds of computation is so prevalent—when books on short cuts in figures are on the book stands, and mechanical devices on the market. And yet, strange though it may appear, there are men in responsible positions in large (and small as well) concerns who waste a considerable portion of time (whether their own or a clerk's, its the company's time, just the same) in going through time-consuming arithmetical operations when, by a knowledge—so easily acquired—of the principle of constants, their figuring could be done so much more quickly, with less chance of errors, and best of all, permitting the saved time to be given to affairs of greater importance.

There are some men, however, who evidently believe that constants are only intended for general production calculations, quite overlooking the fact that the principle of constants, once mastered, is quite capable of considerable extension.

It will be assumed in explaining the method of devising the economy constants that every mill man who is called upon for figures of productions, yardages, running times, of bobbins, spools, cops, cheeses, warps, and so on, has this data made up in the form of tables similar to the following hypothetical spinning frame productions:

Counts	Lbs. 50 hours
30	500
35	428
40	375
45	333
50	300
55	272

As will be seen the table is for 50 hours. Let it be supposed that the mill is to go on 48 hours, either temporarily or permanently. Obviously, the superintendent or overseer will wish to have his table of productions, and so on, up to date. But to do it by the old method of dividing each weight by 50 and then multiplying by 48 is a tedious task and a distasteful one. Oftentimes it appears so irksome that the executive shrinks from it and if he does not delegate a subordinate to work it out for him, he will most likely procrastinate until he is forced to do something about it because of an inquiry which he cannot immediately answer—correctly.

Accordingly, he suffers all the pangs of mortification at having been caught derelict in his duties and he disgustedly tackles the unpleasant job. Yet how simple he would find it if only he would ground himself in the principle of economy constants.

To get the constant for the change in hours divide 48 by 50 which will give .96. Now simply multiply each of the 50 hours productions by this constant. In some cases like the 500 lbs., for 30s, and the 300 for 50s, the calculating can be done without pencil and paper, by just discarding the two ciphers in 500 and 300, leave out the decimal in .96 and merely multiply 96 by 5 or 3 as the case may be.

The entire six production figures in the table can be altered in one minute or less (try it and satisfy yourself). Then another minute in verifying the obtained figures, and the whole has been changed in, say two minutes. Is this time-saving principle not well worth its acquisition?

The revised table then reads:

Counts	Lbs. 50 hours
30	480
35	411
40	360
45	320
50	288
55	261

Take a different case. Suppose that the speed of the spinning frames is changed from 8000 to 8500. Here again there will be a change in the production—the old table is obsolete; a new one must be made up; another arduous job, if the old roundabout method is used. But how easy with the economy constant!

Obviously, there will be an increase in the productions, since the speed has gone up from 8000 to 8500 r.p.m. Divide 8500 by 8000. Three place to the right of the decimal point will be sufficient. The constant is 1.062. Now mutiply each of the old production figures by this constant, and presto, in a few moments the new table is ready.

The increase in spindle speed also necessitates changes in the running time table for the bobbins. Beyond question, every alert overseer will have at hand the running

times of the various counts on his spinning frames. This is essential in order to check up the work that his doffers are doing; furthermore, it enables him to decide whether or not he has too many or two few doffers.

It is quite patent, of course, that whereas the production constant increased the production for the increased spindle speed, the constant for the running time of the bobbins must bring about a decrease in the time. Therefore, 8000 must be divided by 8500, which gives the constant .94. Now then, multiply the constant .94 by 4, the running time of 30s and the new running time is 3.76 hours.

An arbitrary table of running times, old and revised is given below as an illustration:

Counts	Run time 8000 r.p.m.	Run time 8500 r.p.m.
30	4 hrs.	3.76 hrs.
35	4.5 hrs.	4.23 hrs.
40	5 hrs.	4.70 hrs.
45	5.5 hrs.	5.17 hrs.
50	6 hrs.	5.64 hrs.

It must now be apparent that the economy constants can be made to work in many, many ways, either to increase or decrease any already worked up figures. For example, in the case of the effects of the increase of speed of the spindles, two different constants had to be worked up—an ascending and a descending economy constant: ascending in the matter of the production, and decending in the case of the running time.

When the constants are to be retained for future use or for reference, it is well to make some mark at the constant or constants so that when one does have occasion to use them their not-to-be-doubted correctness may be taken for granted. A simple little mark like a cross (x) or a check (v) next to the constant and a similar mark at the upper end of the page on which the constant is recorded with an explanatory word or two will suffice, i, e, "(v) checked as correct."

Because of the fact that every figure computed from an erroneous constant will be wrong, it is vital that the constant, when made up, be immediately checked for correctness and marked, as indicated, so that absolute dependence can be placed on its reliability.

The writer, ever on the alert for short cuts that genuinely make for increased efficiency, has used the foregoing economy constant method for years, and he recommends to all mill men its trial and subsequent adoption.

Designing for Tropical Suitings

BY OSBERT HUGHES.

A full consideration of the general subject of tropical suitings would require far more space than is available for this present article. So it is proposed to deal specifically with a range of goods usually made in 36-inch widths, and using from 7s to 10s cotton yarn warp and filling. Such fabrics are commonly used for golf knickers, sport suits, and similar garments. The usual constructions are 32x30, 36x36, and 42x40, and the average weight about 2.00 to 2.50 yards per pound. These fabrics offer a wide opportunity for the designer to create an attractive range of styles, from plain weave fabrics made on a cam loom to elaborate dobby effects using a box loom.

A low grade of carded cotton yarn may be used as warp and filling for these fabrics, and slight inequalities in the spinning will not greatly mar the appearance of these goods, especially on certain of the weaves used. Mock-twist yarns, spun from two colors of roving, used either for the filling or as warp stripes, are very effective. A novel filling can be made on the spinning frame by using grey yarn and introducing slubs of color at spaced intervals.

The simplest forms of these goods are made on the plain weave order, one up and one down, on a solid-colored warp using the same color as the filling. Grey yarn woven in this manner and properly calendered will give an almost perfect imitation of linen. Many useful effects may be obtained by using a grey warp and changing the colors of the filling used. This enables many orders to be filled from the same warps.

The designing of the pattern will begin with the introduction of stripes. These may take a wide variety of forms, from simple pin-stripes to wide and elaborate bands of color. Good taste and a knowledge of the needs of the cutting-up trade will dictate the type of stripings best

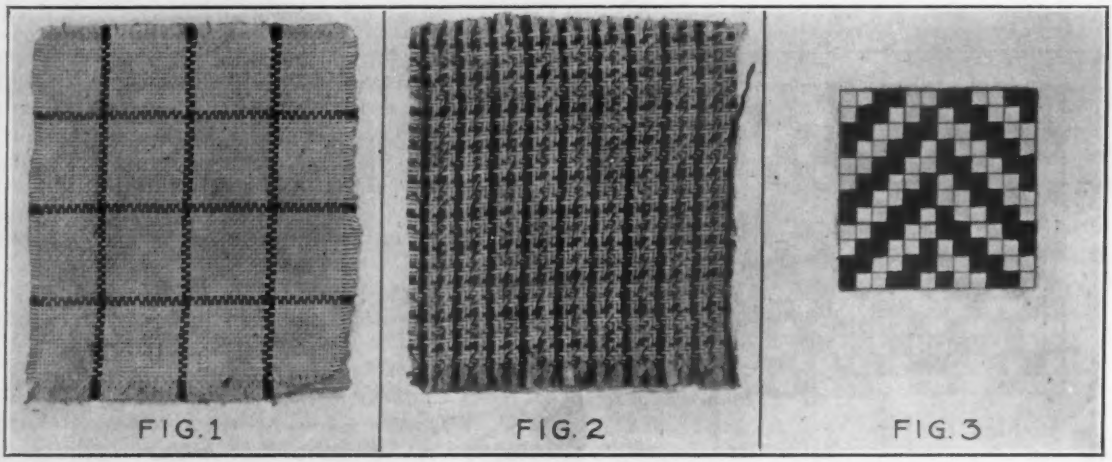


FIG. 1 FIG. 2 FIG. 3

suited for these goods.

These striped warps may be used on box looms and the filling pattern run to balance the warp stripes, thus giving a useful line of checks to balance the stripe patterns. One such check pattern is shown at Fig. 1. By using grey yarn as warp and filling and using a 1-inch check of two ends of red or blue filling to balance, a fabric is obtained that will always find a ready sale as imitation-linen toweling. A colored ratine yarn used for the stripes will give a very rich-appearing suiting fabric.

In the writer's opinion, check patterns always look best when the warp stripes and filling checks balance each other. However, attractive and salable patterns are often developed by using different colors for the filling

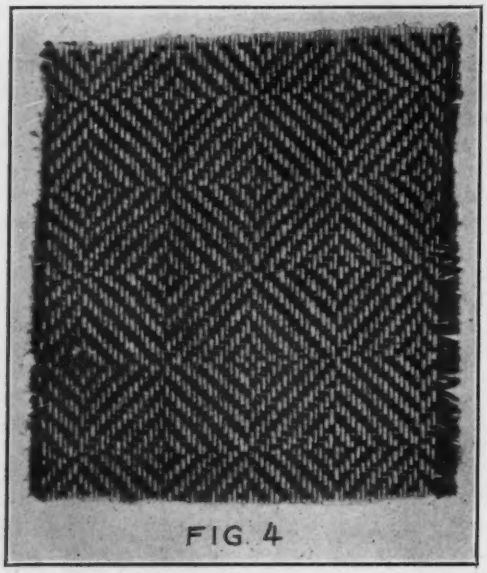


FIG. 4

boxes than are used in the warp stripes. It is not always that those patterns which are preferred by the designer prove to be the best sellers. Modern style, tiring of the old conventional patterns, will often turn to those which are odd and bizarre in its search for something new.

When dobby looms are available the designer's opportunities are greatly enlarged. The simple twill weaves, 2x1 and 2x2, used by themselves or with plain weave stripes, give a wide variety of patterns. Fig. 2 shows a very attractive fabric, made on a box loom and using a 2x2 twill weave. The warp layout for this pattern is as follows:

2 ends white
2 ends tan
2 ends white
2 ends tan and white mock twist,

and the filling to balance. The construction is 32x30, and the warp and filling count is 7½s. This pattern also looks very well, using a plain weave or a 2x1 twill. It is recommended that when making samples of these goods, a drawing-in design capable of making all these weaves be

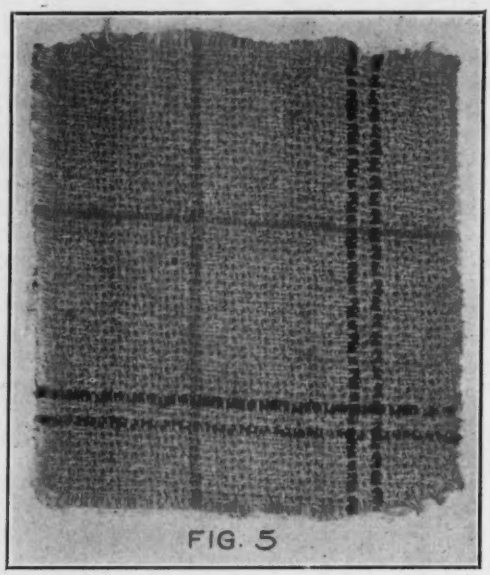


FIG. 5

used. Simply changing the chain on the dobby will thus give all the needed weaves upon the same warp. Plain weave, 2x1 twill, and 2x2 twill require a straight draw upon 12 harnesses in order to make samples in this manner. When weaving twill fabrics it becomes necessary to place the plain weave selvages on two harnesses, unless plain weave stripes are used as part of the pattern, when the selvage ends should be placed upon those harnesses.

By running the twill in one direction over a certain number of ends, and then reversing the weave over the same number, the pattern usually known as "herring-bone" will be obtained. This is an always popular weave and may be made with either the 2x1 or 2x2 twill. Care should be taken to lock the 2x2 twill as shown in Fig. 3, other-

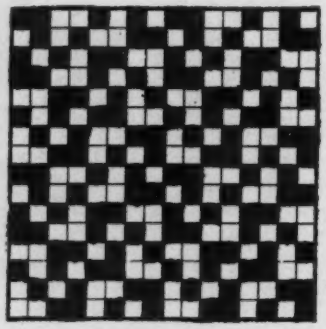


FIG 6

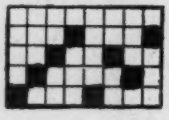


FIG. 7

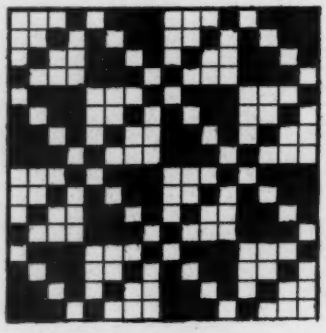


FIG. 8

wise the ends will show a tendency to be distorted where the weave is reversed. A novel checker-board effect is shown at Fig. 4. This is woven on the same draw as the herringbone and made by pegging the dobby chain to obtain the desired effect upon a striped warp by using stripes of color repeating upon a different number of ends than the weave repeat. For instance, the warp pattern may be as follows:

16 ends white
16 ends blue,

and the twill reverse on every twelve ends. This style of pattern, if found acceptable, is capable of an infinite number of variations.

Cord effects, consisting of two ends of the warp drawn as one, or three or four ends of a finer count, bunched, may be used to great advantage in these fabrics, although they increase the number of ends slightly, and may result in somewhat higher costs. When running a cord effect filling way, it is advisable to run the box motion controlled by the dobby chain when possible. This obviates the possibility of the weaver getting the cord and the pattern out of step with each other.

A great many fancy weaves are suitable for these goods. A neat, closely-woven fabric is shown at Fig. 5, and the weave at Fig. 6. This weave is drawn straight on eight harnesses, or may be placed upon four harnesses by using the drawing-in draft shown at Fig. 7. The four-harness draw, however, will not admit of weaving plain weave upon this warp.. Another very effective weave form is shown at Fig. 8.

When dobbies of 16 or 20-harness capacity are available, many elaborate and attractive figured patterns may be developed, such as diamond or lattice effects, checkerboard patterns, and spot repeat figures. A basket weave of two up and two down looks very well as a spot figure, but is hardly suitable for an all-over weave as its loose construction renders it liable to tearing during the finishing process.

These goods are best reeded at one end per dent, and the width from the loom should be about one inch wider than the required finished width. They should be tentered and calendered, and can be given either high gloss finish or a dull finish, as may be required.

Large-Scale Manufacture Saves Money

By LUTHER H HODGES A ND HARRIET L. HERRING.

The article below is one of a series which has to do with the fundamentals of business, or, more properly known as Industrial Economics. These articles are being published from month to month. Each one is a unit in itself, although forming an integral part of the entire series.

Practical mill men like practical material and these articles are designed to meet the needs of textile operating executives who are interested in knowing more about the laws governing business and industry. The entire series has already been used by a large cotton mill organization in the South in its educational work, and this organization found the material to be very practical and effective.

Each article lends itself to discussion by groups of mill men, as well as being helpful and interesting reading. Naturally the articles are brief and in attempting to cover this large field, only the most important points have been considered.

We have already seen in previous articles how the inventions and changes of the Industrial Revolution were the real causes of the factory system. Previous to the Industrial Revolution, articles were made by hand and it is from this situation that we get our word "manufacture", "manu", hand and "facere", to make. Up to the time of the textile inventions the home was the center of industry, the spinning, the weaving and the finishing of the garment were done at home. But industry changed with the coming of these new inventions. Power driven machinery was invented and developed and the coming of power machinery was the turning point in the industrial history of the whole world.

The power driven machinery, which was costly and complex, could not be installed in the home. Therefore, the factories grew up to produce goods made by the new machines. These factories started off in a small way, but have grown to immense proportions. We begin to realize the immensity of our modern factory system when we consider that in America there are nearly 13,000,000 people engaged in the manufacturing industries. This represents 30 per cent of the total workers in America. There is invested in American manufactures, perhaps, a total of $30,000,000,000, with an annual output of products valued at even more than this stupendous amount.

Factories Growing Larger.

As a natural result of the factory system, has come large scale production. It has spread to all types of factories. This large scale production has been the rule in all the factories in a comparative way, whether the factories were large or small. Even the smaller factories produce on a large scale as compared to the old home industries, and in America the tendency has been toward the large unit in factories and this presupposes production on a much bigger scale.

In 1860, according to George E. Roberts of the National City Bank, the average amount of capital invested in an enterprise was $7,190, and the average number of workmen per plant was 9.3. In 1914 the invested capital per enterprise had risen to $82,602 and the workers to 25.5. In 1914 the total number of plants was 275,791 but 35 per cent of the employees and 48 per cent of the total product came from about 3,819 factories, or less than 1.5 per cent of the total. Each of these 3,819 factories had a capitalization of more than $1,000,000.

Specialization.

One of the features of the modern factory and one of the first things that happened in the new factory that sprang up following the Industrial Revolution was to divide up the work into separate parts for the various workers. By devoting himself to a particular feature of a job, then studying that feature, the worker increased in efficiency and became an expert. By becoming more skilled, he turned out a better product in less time. You will note increased efficiency and increased output always go along with specialization. By getting more goods per worker in the same length of time the factory owners have proved their worth, they have made money and have paid higher wages to their employees and satisfied the wants of the consumer at prices the consumer was willing to pay.

In the cotton industry, through highly specialized work and through improved methods, according to Mr. Roberts, the number of spindles in a span of 50 years increased three times, the product per spindle increased one fourth, product per laborer increased four times, price of cloth was 60 per cent less, wages 80 per cent higher, and the consumption per capita of cotton cloth in the United States was 100 per cent greater. In 1840 a certain number of Rhode Island mill operatives working from 13 to 14 hours a day produced 9,600 yards of standard sheeting in a year, while 50 years later they produced 30,000 yards in 10 hours. And even this record has now been improved upon.

In our textile mills the specialization has been carried very far. In the old days the cotton or wool was grown, cleaned, carded, spun, woven and made into garments by a single individual. As against such a method, we now have our cotton plantations, our cotton gins, our brokers and exchanges before the raw materials are delivered to the railroad or steamship lines for transportation to the mills. In the modern textile mill, the raw material is then opened up, mixed, cleaned, carded, combed, drawn and spun through several processes before being reduced to the usable spinning thread. From the thread or yarn state, it must go through many further stages before completion, the number of stages depending on the type of product being put out. It may need to be bleached, mercerized, dyed, quilled, spooled, warped, sized, slashed and beamed, designed, placed and woven. It is then ready for a series of finishing processes, such as singeing, washing, starching, drying, tentering, and folding. To be shipped, it must still be pressed, banded and marked, checked, packed and trucked to the cars, ready for an interminable series of operations and specialized duties and details before reaching the ultimate consumer.

Through all this long journey the cotton is handled by people who are on specialized jobs and who perform just one operation in the making of the goods. By this means the industry has become efficient and the whole process of production is carried on much more cheaply than by the old time methods.

Our Productive Capacity Has Increased.

It has been said that our productive capacity is now over 400 per cent greater than it was around the middle of the past century. Mr. Roberts relates that at the cotton exposition in Atlanta in 1881, two carders, two spinners and one weaver produced eight yards of cloth in ten hours. Now-a-days, the same number of operatives can produce 800 yards of the same cotton cloth in a ten hour day. Further, this increase in production per man can be illustrated in the making of shoes. Through improvements and inventions, the shoe worker is now a much greater producer than the olden cobblers. Between 1850 and 1900 there were more than 4,000 patents issued for shoe making machinery. Now, through specialization and improved machinery one operative in a shoe factory can produce annually all the footwear that is needed for 1,000 men in a year. According to Malcom Kier the labor cost on 100 pairs of shoes has been cut from $408 under the hand system to $35 under the modern factory system.

In the days of Adam Smith one operative in a pin factory turned out 5,000 pins a day compared to one that a single individual could have produced. At present, by automatic machinery and further division of labor, the product per workman per day is said to be more than 1,000,000 pins.

Experience has shown that the further the specialization in a factory was carried the more machines were invented and perfected. This comes about as a very natural development. A job was divided into many parts and operatives were assigned specialized tasks to perform. Through constant study of that particular part of the job, either the operative or someone over him sees a way the job can be done easier and finally by further experimenting and studying, he develops a machine that will take the place of the operative. So it is an important fact to keep in mind that when a specialized operation becomes "mechanical", a machine will be developed to take over the operative's work. The machine multiplies the product many times over and releases man power for other jobs which still require human skill.

A large plant with larger volumes to deal with and more resources to command can divide its work day minutely, assigning each of the various operations to employees best fitted for the tasks. As we shall see in later articles, this idea of specialization extends throughout the complete organization—into production, marketing, finance and research.

"Iron Man In Industry."

Arthur Pound has written a very thoughtful book, "The Iron Man in Industry", in which he portrays the automatic machines taking the place of operatives. These machines are called the Iron Men of Industry. They are heartless, soulless and without imagination—they take away from the operative his job and begin their production with monotonous regularity.

The men who did the operation before are relegated to other jobs in the plant or are dropped altogether. But the machine multiplies several times over and in many instances, a hundred times over the production of the individual. A machine which costs $25,000 must save the wages of operatives, pay for the interest on this amount of money, take care of depreciation, etc., and therefore, must of necessity multiply the productive capacity of the individual operative. They are indeed "iron men" of industry.

Evil Effects of Specialization.

Specialization brings on monotony and although specialization of labor and monotony of work make for economic efficiency, they are not without their evil side. Specialization hampers the all around development of the individual workmen. The old craftsman had a chance to exercise judgement, to develop initiative and originality, and to make vital and helpful contacts in connection with the product he made and sold. But today the workers are but cogs in the machine and their efficiency depends more on their mechanical attention and regularity than to their initiative or actual ability.

It is said that the work of the modern factory is repetitive and continuous. It becomes very monotonous. It tends to kill initiative and retard the development of personality and character. The workmen have no part in the organization or running of the shop. They oftentimes do not even know the operation preceding or following their detailed jobs. They have no appreciation of the romance of their work or of the product they are helping to make. There seems to be no incentive for them to learn or to progress and they, in reality, tend to become a part of the machine which they run.

This is a serious problem. It looks as if the modern factory is discouraging individual capacity and genius and trying to develop tenders of machines who are satisfied with the everlasting grind of the "iron men of industry."

Standardization.

In connection with the specialization of processes has gone the standardization of mechanical equipment and of product. This has been one of the main reasons for the industrial supremacy of America. She has standardized and has thereby developed large scale production. By the standardization of her products, she has been able to cut costs and, therefore, manufacture more cheaply.

One has only to consider in our own mills what standardization of product means to appreciate the differences that appear in the costs and in the details of manufacture. If we made just a standard white sheeting or blue denim in all our plants, our worries would be much less than now. Instead of having a standard weight plain goods year in and year out, we have a great variety of products subject to style changes and seasonal demand. Some fabrics have a great variety of weights and sizes, patterns and colors. This increases costs and multiplies worries and details.

Standardization is perhaps best illustrated in the Ford automobile factory. Everything is standardized. The jobs are standardized, the parts that go to make up the cars are repeated by the thousands and millions, the cars themselves are standardized!

The processes of manufacture are standardized and parts fit into each other as the car moves along while it is being made and assembled. Standard specifications are laid out and all things have to fit the specifications.

Localization of Industry.

It has often been asked why mills are located in certain towns. Various reasons have been given; such as, 1. Water power. 2. Good Labor. 3. Nearness to raw materials. 4. Nearness to coal fields, etc. All these things are doubtless true. But there is still another to be added and that is to get near other textile plants. This is known as the localization of industry. It so happens there are two main centers of concentration for the textile industry; namely, certain parts of Rhode Island and Massachusetts and the Piedmont section of the South. Gaston county, N. C., for instance, has practically 100 cotton mills, while Greenville, S. C. is called "The Textile Center of the South". By getting your plant where other plants are located, you get a skilled labor force built up, you and your workers have interests like other employers and other workers, distribution is easier, financing is easier, and everybody profits. The employer gets skilled and efficient help, the employee gets the benefit of wages paid through competition for his services, and the public gets a better product at lower price.

In the past, the South did not attract new textile mills, even though she had the raw materials and water power and labor. But with the advent of a few finishing plants and bleacheries the trend of new mills is now toward the South. The future development is toward the South. Certain places and certain states are noted for specialization. Akron is a rubber city, Detroit is an automobile city, Grand Rapids, furniture, Troy, collars, Lynn, shoes, Chicago, packing houses, New York City, clothes. Factories are not built just anywhere. The place is chosen for logical reasons, although at times a factory may be started in "the old home town" by an enterprising Chamber of Commerce secretary in order to give the town a factory.

Questions.

1. What are some of the benefits of large scale production? Is it best to have larger factories displacing the small establishments?
2. What are some of the best features of specialization? Some of the evils?
3. Is specialization good for the individual workman?
4. Is "Localization" a good thing for industry?

Mois H. Avram of New York City, has just written a book entitled "The Rayon Industry", probably the first comprehensive textbook on this important phase of textile manufacture. The book sets out to present a comprehensive outline of the rayon industry; and to supply, in a covenient, correlated volume, information and facts regarding the subject which are so much in demand on all sides.

The book achieves its purpose in a very complete manner. Every phase of the industry, from historical facts to technical manufacture and formulae, is presented; the whole industry being covered rather than one process or method, which has been the case with most literature to date. Mr. Avram's book, the pioneer in literature of this kind, comprises a valuable reference book which covers the subject in a most comprehensive manner.

The first part of the book relates the history of the fiber and the industry, outlining its importance and growth, and presenting the remarkable financial aspects. The common textile fibers of commerce and their characteristics are next taken up. Complete information as to the production of rayon, discussing the various companies, is given. After discussing the economics of the industry, showing the uses to which rayon may be put, the book gives an extensive discussion of the various methods of rayon production. Rayon testing is next discussed. A chapter deals with the handling of rayon in weaving, knitting, dyeing, winding, and other processes involved in its use. A very complete list of rayon patents is given. An appendix containing many tables is a valuable adjunct to the text.

D. Van Nostrand Co., 8 Warren St., New York City, are the publishers. Copies may be secured thorugh COTTON'S book department. The price per copy is $10.00 net.

"Intermediate Cotton Spinning", by Thomas Thornley, is a new textbook on yarn spinning, covering the processes of yarn manufacture from the raw cotton stage through spinning. It is up-to-date, since it devotes a chapter to various systems of long-draft spinning recently developed. The operation of the different machines involved in the processes up to and including spinning is described and illustrated, the text being based on English machinery. Mr. Thornley is head of the textile department of Bolton Technical College, Bolton, England, and while this and his previous books doubtless are based on his teaching experience and methods, there is nothing in the style of treatment to prevent their being of benefit to the independent reader. The book is a continuation of the series by this author, which is already well known. The price of the book is $7.50 per copy net. D. Van Nostrand Co., 8 Warren St., New York, are publishers.

Theory and Operation of Striker Beaters

By A. P. ALDRICH, Jr.

The striker beater seems to be coming into its own again. This type of beater, familiarly known as a "Buckley" or "Porcupine" cylinder was one of the earliest forms of cotton opener. Ancient machinery catalogs, dating back a hundred years and more, show the Buckley cylinder in almost the identical form used today in openers.

This striker beater, so called on account of the great number of striking arms, as distinguished from the rigid beaters with two or three wings, has always been a favorite in English opening systems. American mills have not used them as extensively as the English, and for a time it appeared that the Buckley was gradually going out of use in this country. This was probably due to the revival of the Crighton opener.

When first introduced to this country, the Crighton was equipped with a poorly designed step bearing to carry the vertically rotating cylinder, and this bearing caused so many fires that many mills threw out the machines. For a number of years the Crighton was little used here, and in some sections of the country virtually unknown.

The re-introduction of the Crighton, equipped with suitable step bearings to eliminate the fire hazard, soon began to have an effect on the use of Buckley cylinders. A Crighton will handle about three times as much cotton as a Buckley section attached to a breaker picker, and a number of mills threw out the Buckleys under the impression that they were saving a considerable amount of power and floor space while getting equal results.

This has been found to be a mistake. The Crighton does not take out as large a percentage of motes as a Buckley, and does remove a higher percentage of fiber in proportion to the amount of trash taken out. The Buckley is, therefore, returning to favor.

A comparatively recent development of the striker beater is a modified form of Buckley to use in lappers. The old style cylinders were confined to use in openers and breakers for over a century. An occasional attempt was made to use them in lappers, but they made a rather irregular and lumpy lap, and never attained any popularity. A small cylinder has now been developed that will make a good, even lap, and that will give much better cleaning for the amount of beating than any other kind of beater. This cylinder is displacing blade and carding beaters in a number of mills.

The striker beater has much to recommend it. It cleans the lap more by keeping it thoroughly opened than by pounding it. Its action is very gentle as compared with blade or carding beaters, and does less damage to staple and foreign matter. The striker beater is also less dependent than the blade on being kept sharpened. A dull blade does wretched work, and due to the matted condition of the cotton when struck by the blade, and the severity of the blow, the blades dull quickly. The striker arms do not dull so easily, as they strike the lap when it is in a fluffier condition. Furthermore, if dull this does not affect their work so much as dullness in the blade.

The striker beater has almost no tendency to break up motes and leaf, and this is probably its most valuable feature. The breaking up of neppy motes, scattering these neps throughout the laps is the most frequent cause of "nits" in yarn, and a common cause of poor breaking strength.

Most motes are undeveloped cotton seed, surrounded by a mass of undeveloped fibers. The seed, not having reached its full size, is pulled through the ribs of the gin, taking its fiber with it. This fiber is very poor stuff; short and wiry, with very little strength. When torn from the seed, it is very difficult to get this stuff out of the cotton, and the carding simply rolls it up into little "nits" that go through into the yarn.

The fact that a striker beater will take out a higher percentage of motes with less beating than any other type of beater, and that it takes them out more nearly whole, is the chief reason for the present trend to that type of beater. To understand clearly just why the striker beater will do what others cannot, it is necessary to analyze its construction and operation.

Consider first the action of the ordinary blade beater as shown in Fig. 1. The blade is set a distance from the feed rolls about equal to the actual thickness of the

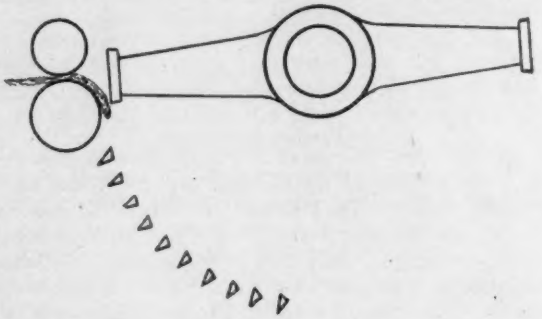


Fig. 1

lap. The blow from the blade whips the cotton off the sheet of lap as it is fed into it. Very little opening action results from this kind of beating. The blade tends to pack the cotton down tighter, rather than to loosen it up, and the quantity whipped off by the blade is in the form of a thin sheet, which is more likely to carry its foreign matter with it than to drop it out.

The cleaning is mostly the result of motes on the top layer of the lap being driven out as the beater slides over the sheet. Naturally, with such severe treatment, a great many motes and much leaf is broken up. The number of blows per inch will vary from 25 to 60 or more, depending on operating conditions, and the individual fancy of the management. A mill running a three-wing beater at 1500 r.p.m. would get 100 blows per inch in making a 50-yard lap in ten minutes. Some mills actually do this.

Assuming a case of 40 blows per inch, it is absolutely certain that the same cotton, motes and leaf will be struck several times before either passing through the beater or going into the mote box. Since the blow covers the whole length of the lap, the foreign matter, as well as the cotton is unable to avoid the stroke, and much abrasion of

fiber and breakage of leaf and motes results. If a carding beater is substituted for the blade, the action is very similar, only far more severe on motes and leaf, as well as on matted fibers. The carding beater, like the blade, tears off a strip of lap, but instead of whipping it off, the pins actually penetrate the sheet and pull out a certain amount of cotton at each blow. It is inevitable that these needle-sharp pins will penetrate motes and leaf, and if they are not pushed far enough through the feed rolls to disengage from the sheet, they will be broken up. This shredding action of the pin beater has limited its use almost entirely to short staple cotton, which goes into coarse goods where "nits" in the yarn are not so objectionable.

Grid bars are placed under the beater for the removal of foreign matter, but where a blade or carding beater is used, the two top bars do virtually all the cleaning. The instant the cotton is disengaged from the sheet, the air current pulls it away from the grid bars, and no cleaning from the lower bars is possible. In fact, a quantity of light motes are actually sucked back into the cotton through the lower bars after having been taken out at the top. Inasmuch as these light motes are all neppy masses that will break up in carding, it is very desirable to get them out.

The action of the striker beater is entirely different from that of either the blade or carding type. Referring to Fig. 2, it will be seen that this beater consists of a number of arms set concentrically around a smooth barrel. The arms are narrow, usually about 1/4 to 5/16-inch thick, and staggered around the barrel in such manner that the striking is irregularly distributed over the sheet. Fig. 3 shows a development of one of these beaters, illustrating the method of staggering the arms. It can be seen that no two rows of arms immediately follow each other, so that there is no tendency to spirality in the action of the beater. If the arms are set spiral, they will work the cotton one way or the other in the direction of spirality, and make lumpy, uneven laps.

By proper staggering, the action of the arms is to knock motes first one way and then another, loosening them up very throughly. The narrowness of the arms permits a mote to glance off them when struck, so that a number of successive blows on a mote will not break it up as is the case with a rigid beater. The mote or leaf may glance from side to side until pushed far enough out to disengage. This is nicely illustrated by tying a knot in a piece of heavy string and feeding this into the beater. Instead of simply beating it down, the arms knock it from side to side.

This action multiplies the cleaning action of the cylinder, and is one of the reasons why it will give more cleaning with less beating than is possible with rigid beaters. With a rigid beater there is one blow for each arm, and only one. With the cylinder, it is quite possible

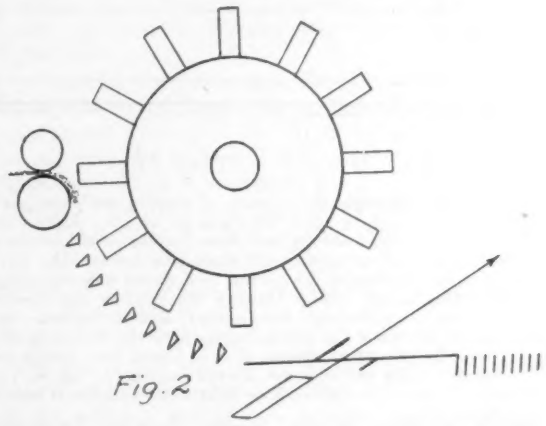


Fig. 2

to have a mote glance from one arm into the path of another, so that while only one arm passes a given point in the lap in one revolution, there may be two, or even three blows on foreign matter of sufficient body to bounce around under the beating.

Contrary to the packing action of the blade, the cylinder keeps the sheet of lap in a very loose condition, so that foreign matter is easy to take out. Furthermore, instead of taking the cotton off in a sheet, it is taken off in very small tufts which are thoroughly shaken as they are removed from the lap. More important still, the cotton after removal from the lap cannot be sucked away from the grid bars. The proportions of the barrel and arms are such that the detached cotton is held close to the bars, and the centrifugal force of the rapidly revolving beater throws the lint against the bars, so that some cleaning is done by all of them, instead of just the top ones.

A very important innovation is here made possible

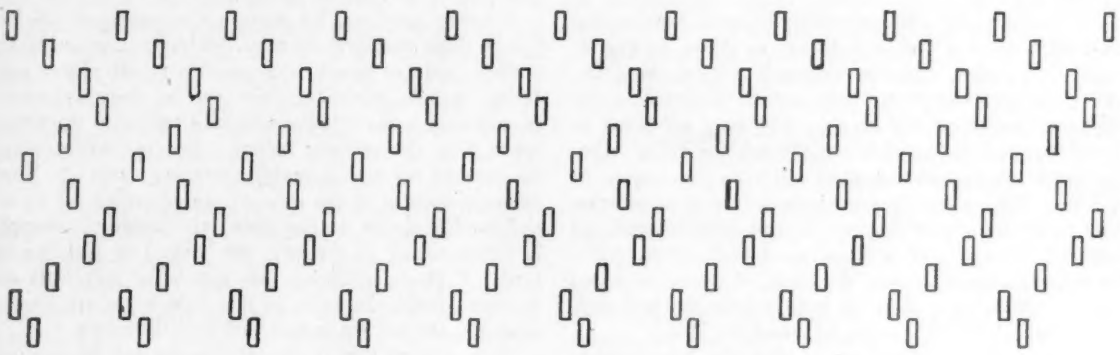


Fig 3.

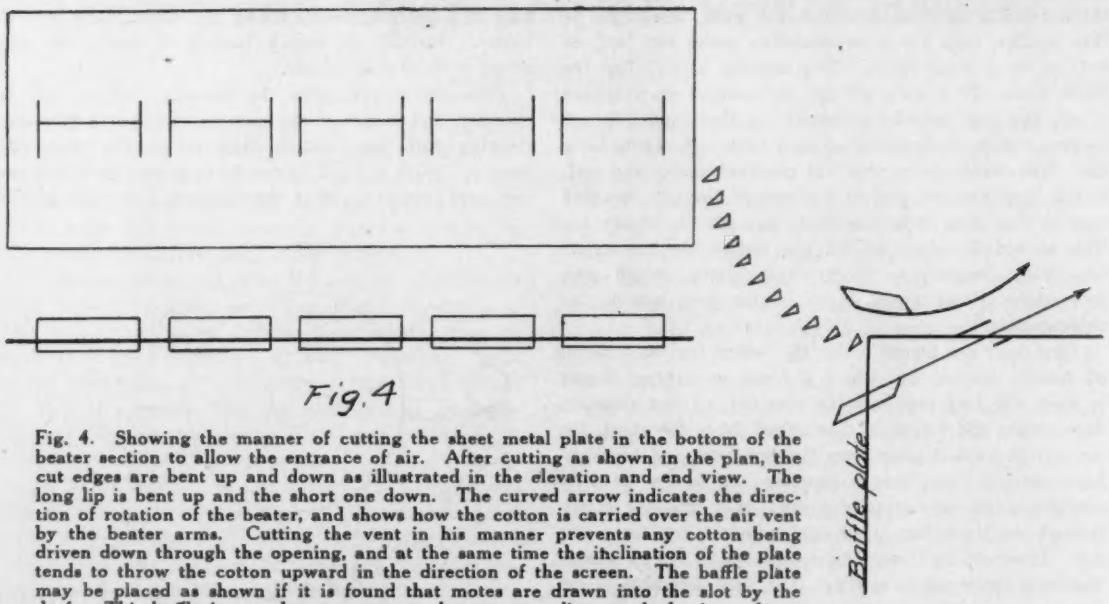


Fig. 4

Fig. 4. Showing the manner of cutting the sheet metal plate in the bottom of the beater section to allow the entrance of air. After cutting as shown in the plan, the cut edges are bent up and down as illustrated in the elevation and end view. The long lip is bent up and the short one down. The curved arrow indicates the direction of rotation of the beater, and shows how the cotton is carried over the air vent by the beater arms. Cutting the vent in his manner prevents any cotton being driven down through the opening, and at the same time the inclination of the plate tends to throw the cotton upward in the direction of the screen. The baffle plate may be placed as shown if it is found that motes are drawn into the slot by the draft. This baffle is not always necessary, but on very dirty stock, having a large amount of light trash and fly, it may be necessary.

through the design of this beater. Previous cylinders were made with small barrels and with the arms riveted to plates spaced along the beater shaft. With that design, the arms had to be bent into position, and the cotton, loading up in the spaces between the plates, was thrown off in the direction of the arm it happened to slide over in coming out. In the new style cylinders, the barrels are large, and all arms straight. This eliminates the possibility of cotton loading up around the barrel, and all lint is thrown off as received by the arms from the lap. Having removed the possibility of loading, it is possible to operate the beater with very little air passing through the grids.

An ordinary beater requires a stiff draft blowing through it to prevent cotton winding around the shaft, but the cylinder requires very little air through the bars, and the less air flowing through the grids, the more motes and trash will fall out of them. In order to get sufficient air to make a good lap, it is necessary to open some vents in the bottom of the beater section as shown in Figs. 2 and 4.

The sheet metal plate covering the space between the grid bars and the dust box, is cut as shown in Fig. 4, which gives plan, elevation, and end view of the plate. After cutting these vents, they may be regulated to admit any desired volume of air. The more air taken in here; the more motes taken out through the grids. Also, this vent has a most important effect on the making of the lap. With a rigid beater, there is little or no obstruction to the air coming through the grid bars, but with the cylinder there is such a large amount of cotton filling in the small space between the barrel of the cylinder and the grids, that the air does not have free passage, and there is not enough draft to properly screen the lap.

If there is not enough air to blow the cotton against the screens, it will pile up in the flue leading from the beater to the screens, and pass through the screens in lumps, making an uneven lap with thin selvages. Increasing the fan speed will not help matters, as this increases the velocity of the air as well as the volume, and as the velocity of air in a passage is increased, the difference in the velocity of the air in the center of the passage and near the sides likewise increases, so that with a high fan speed the cotton will pile up in the middle of the screens and make a lap with bad selvages.

The introduction of air through these special vents is the answer to the trouble so often experienced in making good laps with the cylinder. As a case in point, a mill recently installed a cylinder on a finisher picker that had been equipped with a carding beater running about 900 r.p.m. The beater was speeded up to 1100, without changing the fan pulley, and the fan speed was then 1500. The laps were irregular, and very thin in the selvages, while the droppings were considerably less than from the carding beaters on the adjacent machines. The mill was advised to cut the air vents in the bottom of the machine, which was done, but the results were disappointing. The fan speed was then cut to 1000, and the lap was entirely satisfactory, while the droppings were twice those taken from any of the carding beaters.

Roughly speaking, by a proper arrangement of the size of these auxiliary air vents, beater settings, grid bar settings, and fan speed, it is possible to get almost any desired amount of motes from one of these cylinders. In many cases the cylinder will take out twice the motes removed by the ordinary beater. Briefly summarizing, the reasons for this improved cleaning are: 1. More thorough opening of the sheet of lap, loosening the motes and foreign matter so that they are readily removed. 2. Utilization of all the grid bars instead of just two or three. 3. Draft regulation that permits of very little air passing through the grids, so that light motes are free to drop out, and are not sucked back into the cotton.

It is obvious that if greater cleaning can be obtained with less beating through the use of these cylinders that they are certain to increase in popularity, and it is the purpose of this article to have made plain the theory of operation of the cylinder type beater, and the means em-

ployed to obtain the maximum results. Simply removing the old beater and replacing with the cylinder will not always give satisfactory results. On the contrary, the results will often be most disappointing. Settings, with the cylinders, are of minor importance, but draft regulation is absolutely vital to their proper operation.

Cylinders will operate satisfactorily at the same settings employed with ordinary beaters; a good rule being to set 1/4-inch from the feed rolls on breaker, and 3/16-inch on intermediate and finisher pickers. Grid bars, when of the adjustable type, may be set somewhat wider open than with rigid beaters. The lint being taken off in small, light tufts, there is less driving action to force cotton through the bars than is the case where a whole strip is taken off at a time.

Employing the principles laid down here, a little patience in working with fan drafts and air intakes will yield a big return in improved cleaning and more uniform laps.

One peculiarity of the cylinder is that the same speed, setting, and air regulation suffices for any grade or type of cotton. Experiments with beater speeds ranging from 600 to 1500 r.p.m. seem to indicate that about 1050 to 1100 will give the best results on any kind of work. It must always be kept in mind that at the same speeds, the cylinders strike only one half the blows per inch of a two-wing, and one third the blows of a three wing beater, so that when running a cylinder at 1100 r.p.m., the blows per inch on the stock are equivalent to the use of a two-wing beater at 550, or a three-wing at 367 r.p.m. Therefore, at speeds much below 1050, there is hardly enough action on the stock to open it well. However, at speeds much above 1100, the effects of centrifugal force become so great that it is necessary to work with a close grid setting, and any advantages from more thorough action on the lap are offset by the closer setting of the grids. Remembering that the effects of centrifugal force are proportional to the square of the speed of the beater, it is easily seen how rapidly this effect increases with the higher speeds.

All recent developments in opening room and picking machinery have been along the lines of more thorough opening and cleaning of the cotton before lapping, and the use of as few lappers as will make a reasonably uniform lap. It has been found that the beating in the pickers is the most damaging action to which the cotton is subjected in the whole opening and picking process, and modern picking practice employs the least possible amount of beating, and the greatest amount of pre-cleaning in the opening room.

The cylinder beater is a logical step in this same direction. A mill may cut its beating in half by going from four to two processes of picking, and may then again cut the beating in half by using cylinder beaters. Naturally, stronger and smoother yarn can be expected where a minimum of beating is done.

A Brief History of Cotton

By CHARLES EDWARD RADER

Every little while someone asks for a short outline of the history of cotton. So often has this been done that when the following sketch was compiled by a young student and submitted to us, we decided to publish it for the benefit of these inquirers and others who may desire this sort of a brief story for convenient reference.—The Editors.

The word "cotton" is derived from the Arabic *kotn* or *gootn*. This shows its eatern origin.

Cotton is a vegetable fiber consisting of the "wing" of the seed of the different species of *Gossypium*. The name "wing" is due to the fact that if the fiber was allowed to remain in the boll until it came apart of its own accord, the lint would cling and serve as a sort of parachute, so that the wind might carry the seed farther from its source.

The fiber consists chiefly of carbonaceous material drawn from the air. It is one of the purest forms of cellulose. Cellulose is the basic from of plant matter.

The fibers are spiral in form. Under a microscope they look like twisted ribbons. They interlock with each other nearly their whole length, and it is because of this twist that it is possible to spin them easily.

Cotton was used long before the dawn of history, so long, in fact that it is hard to obtain satisfactory evidence of the truth of some of the earliest records.

The people of India grew cotton on a large scale as early as 800 B. C. India has been recognized as the original source of cotton. As evidence of this, several of the words we use to designate cotton fabrics come from India. Madras and Chintz are two of these. Madras is derived from the Sanskirt "Karpas" or "Kapas". Chintz comes from "Chethon."

Evidence gathered from ancient law manuscripts of India shows that in 800 B. C. cotton was not only cultivated in India. but that the cotton indusry was on as firm a commercial basis as the industry in England three hundred years ago.

The ancient people of Peru undoubtedly cultivated cotton fully as long ago as the peoples of India. These people lived long before the Incas who were found when Peru was discovered by Pizarro.

In 306 B. C. cotton was used commercially on the Island of Tylos. Herodotus writes of the fact that the ancient Egyptians used cotton a great deal at that time.

The art of cotton spinning and weaving was confined to Asia until the second century after Christ. At that time it was grown in Elis, and manufactured into hairnets.

Spain was the country in medieval Europe where cotton culture was established. It was established under Abdurrhamans III (912-961 A. D.) By the fifteenth century cotton culture had spread over all southern Germany.

In 1641 England began to manufacture cotton to a large extent. From there it reached the colonies, where at one time nearly every home south of New Jersey raised a small patch of cotton.

The industry in America was only carried on to obtain cloth for home use, until 1793, when Eli Whitney invented the cotton gin. This was the only machine that could remove the seed from American cotton, because it can not be ginned by any of the methods used in the old world. Consequently, the fiber had to be pulled from the seed by hand, which made it too expensive. Largely because of this invention the southern states henceforth, became the greatest cotton growing region in the world.

The eighteenth and nineteenth centures comprised the machine age in the cotton industry. During the nineteenth century the factory system was introduced into England and later into the United States. This was the last great new development in the rise of cotton. Since then only the size and productiveness of the machinery has been increased.

Following is a chronological record giving some of the most important dates in the history of cotton:

800-700 B. C.—Cotton cultivation is seen to have been long established in India.

400-300 B. C.—Knowledge of cotton is brought to the Greeks by Herodotus and the chroniclers of Alexander the Great.

70 B. C.—The Romans use cotton for tents.

100-200 A. D.—Cotton is grown in Elis and is there manufactured into hairnets.

912-961 A. D.—Cotton culture and manufacture are firmly established in Spain under Abdurrhamens III.

1200-1300 A. D.—The Tartars introduce cotton cultivation into China.

1200-1300 A. D.—Cotton is used in France for men's hats.

1492 A. D.—Columbus finds cotton on the Bahama Islands.

1520 A. D.—Magellan reports cotton in Brazil.

1753 A. D.—First American cotton sent from South Carolina.

1783 A. D.—First English cloth to be made entirely of cotton is produced in Lancashire.

1793 A. D.—Eli Whitney invents the cotton gin.

History of the Cotton Industry.

The cotton industry of ancient India has been mentioned before. In the law manuscripts of Manu, written about 800 B. C., there is a law requiring the weaver to soak the cotton he received in rice water, which would cause it to swell before he gave it back to the owner. Facts brought out in these manuscripts show that in that remote day the industries of weaving and spinning were distinct. This in turn shows that the industry had been long established, because if not the spinner and weaver would have been the same person.

At this early date the hand wheel, which did not come into use in Europe until the fifteenth century, was in use in India. The kind of loom that was still in use in India during the sixteenth century was also in use in the early period mentioned.

The Indian Peninsula was also the original home in the Eastern Hemisphere of the art of printing, painting and dyeing of cotton. Herodotus, in 450 B. C., writes that the peoples near the shore of the Caspian Sea beat the leaves of a certain tree into a powder and steeped them in water. With the dye thus formed they painted designs on a garment. He is undoubtedly speaking of a form of resist dyeing with indigo and beeswax, which would seem to him like direct painting.

There were four principal methods then in use for decorating cotton cloth; resist dyeing, mordanting, stamping and printing. The earliest was resist dyeing. In doing this, wax was applied to the cloth except where it was wished to dye it. The dye could not penetrate through the wax, so it dyed only the uncovered portion. Mordant dyeing consists of applying certain chemicals to the cloth, which causes it to take on certain colors when placed in the dye solution. Printing consisted of applying dye to the surface of a carved wooden block and pressing it on the cloth.

In ancient Peru we have the most complete fabric record left by any ancient people. Though they vanished from the earth long before America was discovered they left on their pottery a perfect record of their cotton industry. They first pulled the seed from the cotton by hand. The fiber was now pulled apart and pressed into a strip or lap about four inches wide. This lap was then broken apart and formed into a beehive shaped cone that was about one foot high. From the larger end of the cone the fibers were then drawn and twisted around a small spindle. This was the process of spinning. It required great skill on the part of the worker, for it was this skill and not the tools used that made the spinning possible.

The loom used by the Peruvians consisted of two parallel rods around which the warp threads were wrapped. This type of loom was also used in ancient India and in the silk areas of China. It has been found all over the world wherever there was cotton or silk.

It would be interesting to note here that in ancient Peru there were two kinds of cotton, a variety with a long, fine, white, lint and another with a shorter brown fiber. The ancient Peruvians, though they were excellent dyers in some ways, had trouble in dyeing the brown cotton. They seem to have used mordant dyeing and resist dyeing largely.

The cotton industry in the Eastern Hemisphere was confined entirely to Asia until the second century after Christ, when a little was grown and manufactured into hairnets in Elis. This industry also remained isolated for a long time, the next country of Europe in which cotton culture was established being Spain. The industry was established there during the tenth century.

Venice, Italy, and Ulm, Germany, began to manufacture cotton in 1320. A hundred years later the industry had spread over all Southern Germany.

After the voyage of DeGama in 1497 Portugal built up an enterprising trade with India. England and Holland soon took up this trade. The calicos, lawns, quilts and carpets to be obtained from India were of great value. this was the important means by which the knowledge of India cotton culture, method of dyeing and methods of weaving reached Europe.

There is a disagreement among the authorities about the date of the beginning of the cotton industry in England. Some authorities give the date as 1600 and others as 1641. According to one authority, in 1621 the wool merchants made this complaint: "For about twenty years divers people————in the country of Lancaster have out the trade of making fustian out of a kind of down———— commonly called cotton wool————. There are at least 40,000 pieces of fustian of this kind yearly made in England————."

The interest in cotton kept growing all through the seventeenth century, until in 1700 the industry was so large that the wool manufacturers, who had always opposed the cotton industry, secured the passage of a law against the manufacture of cotton. This law also forbade the use of printed goods of all kinds. Great quantities of Indian printed goods and cottons had lately been imported into England and were becoming very popular. This law was not as effective as had been hoped, so in 1721 it was fol-

lowed by another which imposed a fine of five pounds on the weaver and of twenty pounds on the man who sold cotton cloth. The opposition to the manufacture of cotton became so strong that even criminals on the scaffold pleaded with the people to shun the wearing of cotton. This is proved by an account given in an English paper of the year 1734.

Despite this opposition, however, the industry continued to thrive, as both spinners, weavers and merchants found that they could make much money from it. In 1791 a pamphlet entitled "The Weavers True Case" stated that even the women of noble class were wearing cottons. At any rate cotton became so powerful that in 1736 the law of 1721 was amended so that it now forbade only the importation of Indian printed goods.

By 1754 the popularity of cotton had become so great that an act was passed permitting the printing of calicos in England. This practically did away with the law of 1700 and 1721. The demand for printed calicos at this time caused the merchants to search for a quicker way of printing than the old way of using wooden blocks. This demand brought about the invention in 1770 of a method of printing with engraved copper cylinders, which were covered with ink and then pressed on the cloth. This invention was the forerunner of our modern printing press. With the latter half of the eighteenth century came the machine age of the cotton industry.

First among the many mechanical devices invented during this period comes the flying shuttle, invented by John Kay. This was invented a little before the recognized beginning of the machine age, as it was invented in 1733. This invention was intended to be used to weave cotton, but it was stolen by the wool workers of Leeds. Kay also invented a spinning machine, but it was destroyed by a mob. He died in 1764.

Richard Awkwright was the inventor of a spinning machine which incorporated the ideas used in the machine which had been invented by Paul and Wyatt, two other English inventors, with some of his own. He completed this machine in 1771.

Awkwright is also regarded as the father of the modern factory system. Prior to this the cotton had been imported from India or some other country and sent to the merchants, who distributed it among the spinners. When the yarn was woven it was returned to the merchants, who then sent it to the weavers. They wove it and sent it back to the merchants. That would be only a small part of the distance it would have to travel before it could be sold.

In the seventeenth century, about seventy-five years before, it had to be first sent to London, then to Manchester to be spun. It then went to Paisley to be woven, to Ayrshire to be tamboured, and back to Paisley to be veined. It was hand-sewed at Dumbarton, and sent to Renfrew to be bleached. The Paisley merchants then handled it again, then sent it to Glasgow, from which place the finished product was sent to London.

This would be an exaggeration of the conditions during the eighteenth century, but it gives an idea of how widely separated the various branches of the industry were at first.

Awkwright built the first cotton mill in England in 1771, and ran it by water power. He could so far under sell all competitors, and in 1775 he was able to build another mill.

In 1779 the greatest invention of this period was completed by Samuel Crompton. It was a spinning machine that incorporated both the ideas of Awkwright and those of two or three other inventors. It is stated by some authorities that his invention gave England the final control over the art of fine cotton spinning.

The next century in England and America was also a century of great inventions, but they were directed to the perfecting of the details and the speeding up of the machinery.

Some of the other countries of America, or at least Brazil, had begun to export as early as the seventeenth century, but the industry in America in the eighteenth century was of little importance.

Some authorities give the date of the real beginning of the cotton industry in the United States as 1793, the date of the invention of the cotton gin by Eli Whitney. Their opinion is that there was no real industry in the United States prior to this date, because of the difficulty in removing the seed from the lint by hand.

Previously the South had been experimenting with machinery for manufacturing cotton, and if the cotton gin had not been invented, the South might have become a manufacturing section like the North. The invention of the cotton gin caused the South to become almost entirely agricultural.

In discussing the invention of Eli Whitney's cotton gin, we speak of an invention which has had a very great effect on two great countries. Its invention made the South an agricultural district, and gave the North an incentive to the developing of cotton manufacturing, and it provided raw material for the mills of England. If the cotton gin had not been invented the English cotton industry would not have grown to its present size, for it would have been limited by the supply of raw material available.

Eli Whitney was born in Massachusetts. He later moved to Georgia, where he became manager of the estates of widow of General Green. While there he perfected the original Whitney gin, which gins over ninety per cent of the American cotton. It consists of a box with a flooring of grids, the slits of which are too narrow for the seeds to go through. Circular saws revolve through these slits and tear the lint from the seed of the cotton in the gin. Brushes remove the lint from the saws.

The response to this new way of separating the lint from the seed was amazing. The cotton growers of the South had little incentive to manufacture cotton when they could make money so much more easily by raising cotton and shipping it. In 1791, 189,500 bales of cotton had been sent to England. The following table shows the increase in the amount exported after the invention of the cotton gin.

Year	No. of Bales	Year	No. of Bales
1791	189,500	1795	6,276,300
1792	138,325	1796	3,788,429
1793	487,000	1798	9,360,005
1794	1,601,700	1800	17,789,800

Despite the growing cotton industry in the North, the South continued to export more and more cotton to different parts of the world until that section became the greatest cotton growing district in the world. The accompanying figures show how important a part of England's cotton imports was formed by Southern cotton. They represent the number of bales imported by England in 1859, the last year before the Civil War, and in 1865, the last of the Civil War.

	BALES	
Imported From—	1859	1865
United States	2,522,000	198,000
Brazil	103,000	212,000
West Indies	10,000	60,000
East Indies	563,000	1,798,000
Egypt	110,000	319,000
	3,308,000	2,587,000

This table shows a decrease of 721,000 bales from the amount of pre-war imports. In the years of the Civil War preceeding 1865, before England had begun the growing of cotton in her various colonies, her cotton imports had fallen far below those of 1865. The lack of cotton was so keenly felt that many people in England clamored for war with the United States.

Meanwhile the manufacturing industry had been growing in the North. The first center was around Providence, and in Pawtucket, R. I. The first mill in the United States had been established near this place in 1790.

The first mill in the United States using power looms, and where every stage of the manufacture was gone through with, was established in 1815. The fine yarn industry was established in New Bedford in 1857.

Before the Civil War the South also began to build cotton mills, though the greater part of their growth came after that time. By 1895 the southern cotton mills had reached a firm economic basis. The following table shows the comparative growth in the number of cotton spindles in both New England and the South over a period of thirty-two years.

	1890	1922
New England	10,934,297	17,938,805
South	1,570,288	15,906,265

A Few Words on Cultivation.

The cotton growing section of the United States embraces a territory five hundred miles from north to south and fifteen hundred miles from east to west. This territory includes the states of Alabama, North Carolina, South Carolina, Louisiana, Mississippi, Kansas, Oklahoma, Texas, Florida, Georgia and Tennessee.

There is no month or season in which it could be said that the cotton crop was planted or picked. Planting might be begun in some parts of the cotton area as early as February and not finished in others until June. The picking might begin in July in one section and not be finished in another until December. Besides these there are numerous varieties of temperature, etc., in addition to the numerous pests which attack the cotton plant. This causes an immense variety in the size and quality of the crops in even relatively close districts.

A machine is now used to sow the seed in nearly all parts of America. The plants germinate in about ten days. Provided its development is not hindered, the plant will grow four inches high at the end of the first month. The plants are then thinned out so that there is a space about three feet between each. This is to secure the maximum amount of sunlight for each plant. The ground between the plants is broken up by the cultivator once every three weeks until the flowers appear and the boll is formed. Five or six weeks later the cotton is ready for picking. There may be as many as four pickings from the same cotton field in one year. The second picking is usually the largest.

In the foregoing statements we have assumed the weather has favored the growth of the plant and that none of the hordes of insect enemies have devoured it. The chief of these is the boll weevil. The pest was first noticed in Mexico in 1862. In 1892 it was found in Texas. In 1906 it infested a third of the cotton acreage. It now infests the entire cotton area.

The weevil hibernates in the winter and goes out in the early spring in search of wild cotton plants. From these it goes to the cultivated fields. The female deposits the eggs in the formed bolls. The young weevils feed on the bolls and then in turn fly away to lay more eggs. Each weevil lays three hundred eggs, and their total life is only fifteen days. It is easily seen from this that the off-spring may number millions by the end of the season.

The other insect enemies are the boll worm, the cut worm, the cotton moth, and the army worm. The boll worm destroys the boll only. The cut worm attacks the plant in its early stages. The cotton moth produces the caterpillar which eats the leaves. The army worm will come in large numbers and devastate a whole field at one time.

The fields are "white unto harvest." It is now time for the most expensive operation in the whole process of growing and manufacturing cotton, the picking. This must still be done by hand, in practically the same way as the Hindoos picked their cotton in 800 B. C. The chief obstacle to the development of a successful cotton picking machine is the irregularity in the height of the plant, and in the time that the boll takes to mature.

Cotton has been called "the black man's crop" because the work of picking is done mostly by negroes. The pickers go over the field and picking the bolls, put them into a large bag which is provided for the purpose. There is a great demand for a cotton picking machine, for this phase of the cultivation is far behind any of the others. A man with proper machinery can cultivate twenty acres of cotton in one day, but the same man can pick only about three hundred or four hundred pounds of cotton a day.

Bibliography.

Everybody's Cyclopedia—Volumes II and V.
M. D. C. Crawford, "The Heritage of Cotton."
George Bigwood, "Cotton."
W. A. Mowry & A. M. Mowry, "American Inventors and Inventions."

Leather V Belts on short center drives, such as spinning frames, winders, etc., are coming into more general use. Of interest in this connection is a special drive for spinning frames, etc., recently brought out by the Graton & Knight Company, Worcester, Mass., who have been making V belt installations for over 15 years.

The textile drive will be of interest to the mill man. It is made to give long life, together with silence. According to the manufacturers, it is flexible, yet positive, the flexibility of the leather eliminating damage by sudden load or stoppage. Decreased tension and frictional loss is produced by the fact that it operates best when slack. No lubrication is required, and small pulleys, high pulley ratios and short centers are permitted. The danger of stretch difficulties on short centers is eliminated, it is stated, and the belt will not fray or pulverize on V groove operations as a result of the continuous pulling in and out of the grooves. In the case of some foreign obstruction causing a break in the belt, it is explained, it is necessary only to replace the damaged link instead of the entire belt. All Graton & Knight industrial V belt drives are uniformly figured on a 28-degree included angle for the groove and the belt, as the most efficient devoid of a wedging tendency, it is stated.

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What the Southern Mills are Doing

Announcement of construction work and plans indicated a healthy activity among southern textile mills during the past month along the lines of extension and improvement.

In Alabama, the Lincoln Mills of Alabama, at Huntsville, announced plans for the construction of three new units of a mill designated as Mill No. 3, across the street to the South of the present No. 3 Mill. Construction on the first unit is well under way. In connection with this development, 500 houses for operatives will be built. An investment of approximately $3,000,000 will be represented in the expansion. The first unit of Mill No. 3 will be 240x190 feet, three stories high. High grade cotton duck will be manufactured.

Dwight Manufacturing Company, Alabama City, Ala., has awarded contract for a second group of fifty houses for operatives, in connection with the enlargement of the manufacturing facilities at the mill.

It is understood that the Opp Cotton Mills, Opp, Ala., will double the capacity of the plant, where wide sheetings are manufactured. The present equipment consists of 4,992 spindles and 160 looms.

Russell Manufacturing Company, Alexander City, Ala., recently announced plans to install 384 looms for the manufacture of pajama checks. An additional order for looms to bring the total to 650 has been placed. A new building will be erected to house the weaving machinery. The company operates already a number of small yarn mills.

An addition of 4,500 spindles will be made to the plant of the Dallas Manufacturing Company, Huntsville, Ala., it is announced.

A $25,000 office building is to be erected by the Crystal Springs Bleachery Company. This concern recently increased the capital stock from $700,000 to $5,000,000, and declared a 100 per cent stock dividend.

Cornelia Cotton Mills, Cornelia, Ga., have been chartered. The officers are: W. B. Ellard, president; K. L. Jones, vice-president and general manager; and C. C. Courier, secretary-treasurer. The stock has been subscribed, and work on a building for a cotton mill is planned at an early date.

Dalla-Noval Yarn Mills, Inc., have been organized to take over the Liberty Cotton Mills, at Dallas, Ga.

A new mill building is being erected by The Trion Company, Trion, Ga., and 20,000 spindles and 600 looms will be installed. This increases the facilities at Trion to approximately 85,000 spindles and 2,100 looms.

An addition is to be erected at the North Carolina Finishing Company, Yadkin, N. C., it is reported. J. E. Sirrine & Company are the engineers.

Kings Mountain Manufacturing Co., Kings Mountain, N. C., are adding some cards to the existing equipment.

Dilling Cotton Mills, Kings Mountain, N. C., have recently purchased additional silk winders from Benjamin Eastwood Company, Paterson, N. J., through the southern agents, Carolina Specialty Co., Charlotte, N. C.

Jennings Cotton Mills, Lumberton, N. C., have let contract for the erection of a weave shed as an addition to the spinning plant. The addition will be one story, 150 x 130 feet.

Southern Specialty Company, Charlotte, N. C., is installing additional silk warpers made by the Sipp Machine Co., Paterson, N. J., and a slasher from Charles B. Johnson, Paterson, N. J.

Grace Cotton Mills, Rutherfordton, N. C., heretofore manufacturers of combed yarns, are to install 160 looms for the manufacture of combed broadcloths. K. S. Tanner is treasurer.

Belmont Processing Company, Belmont, N. C., is adding some further Sipp rayon winding machinery.

Locke Cotton Mills Co., Concord, N. C., will erect an addition in which preparatory machinery to augment present equipment will be installed.

Cramerton Mills, Cramerton, N. C., have ordered additional Sipp rayon warping machinery.

Roanoke Mills Co., Roanoke Rapids, N. C., will erect a three-story cotton warehouse, it is reported.

Ragan Spinning Company, Gastonia, N. C., has installed 2,112 spindles with the necessary preparatory equipment to balance these new frames.

The installation of considerable additional carding and spinning machinery is being considered by the Entwistle Manufacturing Company, Rockingham, N. C.

A spacious club house and two summer homes for officials will be erected by the Cone interests on their 210-acre reservation near Greensboro, N. C. The club house will be for the use of the Cone mills employees, and will be located near a 17-acre lake.

Rowan Cotton Mills, Salisbury, N. C., is adding ten spinning frames.

National Fabric Company, of New York, has purchased a site near Charlotte and will erect a silk weaving mill to house 100 Jacquard looms. F. H. Schloss is secretary of the company.

Arista Cotton Mills, Winston-Salem, N. C., will be moved into the building in which the South Side Cotton Mills are located, and a large addition will be made to the latter plant. The mills are owned by the same management, who feel that economy will be effected by the consolidation of the mills, which manufacture similar products. J. E. Sirrine & Company are the architects and engineers. It is understood also that a number of houses will be built in the South Side village.

Lola Manufacturing Co., Stanley, N. C., are finishing the erection of a number of new houses in the village, it is announced.

Ellenboro Mfg. Co., which recently installed 30 bedspread looms, has purchased slasher and cloth room machinery from the Fidelity mills, which own the Mecklenburg Mills property, Charlotte, N. C.

Industrial Cotton Mills Co., Inc., Rock Hill, S. C., has awarded contract for the construction of an 80x125 foot warehouse. J. E. Sirrine & Company are the engineers.

Drayton Mills, Spartanburg, S. C., will, it is understood, erect a weave shed. Since the mill began making part-rayon fabric, it is explained, the spinning equipment is capable of producing yarns for an increased number of looms.

The Woodruff plant of the Mills Manufacturing Company, Woodruff, S. C., which now manufactures combed yarns, is to install weaving equipment for making print

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cloths and pajama checks and discard the combing equipment, according to a report.

Two brick warehouses with a total floor space of 10,000 feet, and a new picker room, are being built by the Blair Mills, Belton, S. C., as well as several additional houses in the village. Modern cleaning machinery will be installed in the picker room just as soon as it is completed, the report states.

Cowpens Manufacturing Co., Cowpens, S. C., manufacturers of bedspreads, have leased a branch in which draperies and curtains are being manufactured.

Laurens Cotton Mills, Laurens, S. C. have purchased 50 box looms for making fancy dress fabrics and handkerchief goods.

Fifteen houses for the Victor village at Greer, S. C., have been started by the Victor-Monaghan Company.

Clinton Cotton Mills, Clinton, S. C., are building ten new four-room houses in the village.

Carolina Textile Corp., Dillon, S. C., has installed a complete electrical power equipment for operating and lighting Dillon Mills No. 1 and No. 2. Considerable repair and painting work has been done on the 400 houses in the villages.

Work is progressing on the addition at the Ninety-Six Mills, Ninety-Six, S. C. The addition is 260 feet long and four stories high, and the equipment installed in it will bring the total to 60,000 spindles and 1,400 looms. About 125 houses are being added to the village.

Orangeburg Cotton Mills, Orangeburg, S. C., will be removed to new site outside the city, is is announced.

American Spinning Company, Greenville, S. C., has been purchased by the Florence Mills, Forest City, N. C.

Maginnis Cotton Mills, New Orleans, La., are adding 100 36-inch automatic looms.

Hartwell Mills No. 2, Toccoa, Ga., are electrifying the mill with Fairbanks-Morse ball bearing motors. J. E. Sirrine & Company are the engineers. Other orders of this equipment include: 42 one-horse power loom motors, Dunson Mills, LaGrange, Ga.; six 25-horse power motors, Georgia-Kincaid Mills, Griffin, Ga.; and 47 loom motors, Swift Manufacturing Co., Columbus, Ga.

New England Mill Situation.

Since the first of the year several financial reports from New England mills have been made public, showing the conditions as of Dec. 31, 1926, compared with Dec. 31, 1925. Many of the reports have indicated severe losses, the Pacific mills topping the list at nearly a million dollars New Bedford mills showed "in the red". In Fall River the year opened with two mills offered for sale in lieu of taxes, and another being stripped of its machinery. Two other corporations there have undergone changes in management since the first of the year. In Rhode Island, the Manville-Jenckes corporation has been in the limelight as the center of conferences between workers and management to determine whether the mills may be kept intact in that state. Citizen's committee's and civil authorities were represented at the discussions.

These things all seem indicative of demoralization. But they must be looked upon in the light of the thing that has passed and not the condition that is. There were several operating losses shown by the mills last year but most of the real losses were taken through a shrinkage of the inventories, due to the drop in cotton or other quick assets. Values have been marked down on many mill books to a point from which further declines will be slow, if at all.

There is some virtue in the policy of getting inventories as far down as possible in communities where anything showing as a surplus of quick assets over debts is looked upon as a shining mark for taxation, or wage grabbing. In the case of the great loss of the Pacific mills, it is known that the company actually showed a profit on the large overturn but it was determined to follow the cotton market to the lowest level and to carry other material charges on levels no financier can criticize.

To add to the gloomy picture, circulars were sent out to the stockholders of the Everett mills of Lawrence calling them to attend a special meeting for the purpose of reducing the capital by cancelling a pro rata part, without payment by the corporation. In other words, the stockholders of one of the oldest and most widely known corporations in the gingham manufacturing business were asked to contribute $700,000 in new capital, or to liquidate the corporation, or to take any other action deemed necessary in a situation where the business had failed.

The mill balance sheet at the end of the year showed current liabilities of $1,139,820, of which $1,120,000 was represented by notes falling due this year, all endorsed by Smith, Hogg & Co., selling agents for the mills. The current assets were $1,333,445, and the excess of current assets over current liabilities, $193,625. The selling agents will not endorse mill notes where the current assets may be below liabilities before the notes are due, and the mills are not in a position to borrow without endorsement. The treasurer and directors believe that the outlook is better than it has been for several years, but the mill has not made a profit since 1922, when a six month's strike led to complete idleness, except in the single year of 1923 when it showed a profit of $174,000. For the nine months ending Dec. 31, 1926, the estimated loss was $468,000, this being explained largely by the drop in cotton. In 1924 the loss was about $960,000.

It may be seen from this that the position of the mill is an unfortunate one. Probably no gingham in this country is better known than Everett Classics, one of the products of the Everett mills for more than 50 years. The quality of the product turned out is unexcelled. But as everyone knows, the market for ginghams has contracted in recent years and the mills did not change their product to meet new conditions. The great after-war surplus was not spent upon new equipment to make new sorts of goods.

Having dwelt on the gloomy side of the New England picture long enough to indicate that there is such a side, it can now be stated that a brighter side is coming into more general view.

Throughout New England since the first of the year there have been a series of meetings of citizens looking toward affording relief to textile industries from the heavy burdens of taxation, and from the withering effects of a hostile public spirit affecting corporations. Cities and towns in Massachusetts have been invited to send representatives to a joint conference to be held at Fitchburg, Mass., in response to a request sent out by Mayor Joseph A. Lowe.

Several conferences have been held and are being held in various Massachusetts communities between manufacturers, business men, operatives and others, all looking toward

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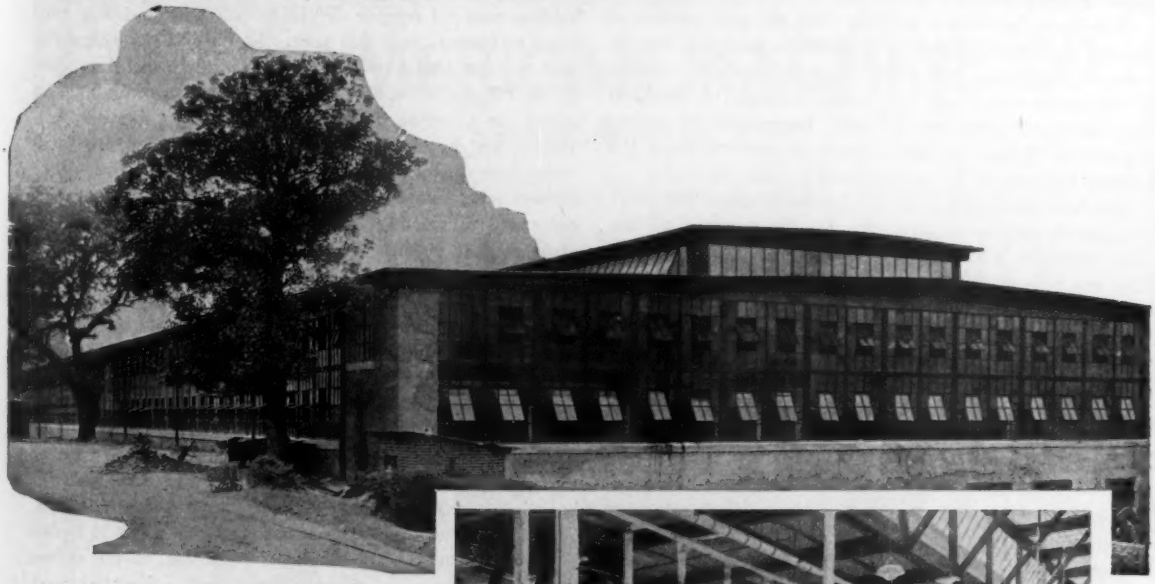

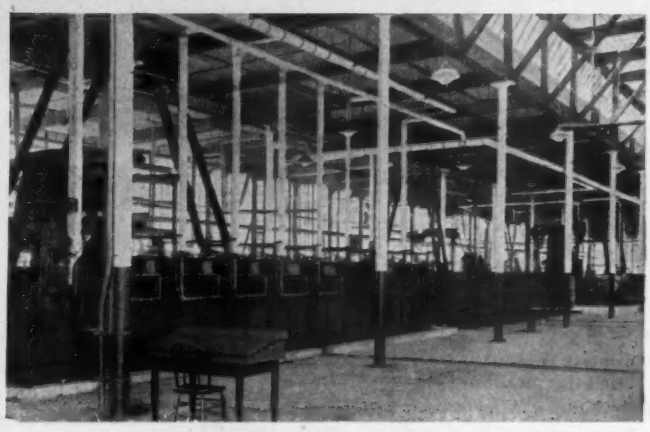

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Fitchburg has been a sufferer from the past policies of citizens toward industries to a degree beyond that seen in some other places. One of the mills in that city recently failed and it was found that assets scheduled at $500,000 were not worth more than $50,000. Suggestions of revocation of the 48-hour law are common all over the State but nothing is likely to be accomplished in that direction.

In New Hampshire, one of the small towns cut down the appraisal of a mill property, for the purposes of taxation, $400,000, or nearly one half of the total appraisal. This was done after the mill failed and was offered for sale by its creditors. A buyer would take a chance of trying to operate the plant profitably provided taxes were cut in half, hence the vote of a town meeting to reduce the valuation. In other parts of New Hampshire, similar reductions are underway, and the proposition is before the legislature for permitting a change in the whole system of mill valuation for taxation purposes.

Governor Fuller of Massachusetts has asked representatives of 27 cities and 43 towns to meet him to talk over the situation in the textile industry, and while he does not believe that things are as bad as reported, he will seek remedies for present troubles. In Rhode Island, several conferences have been held between citizens of Woonsocket and elsewhere, and the officials of the Manville-Jenckes mills, to see what can be done to improve the situation there. Strikes have demoralized the workers and crippled the mills, and other unfair burdens have resulted in serious talk of closing some of the plants for good and removing machinery South where the corporation already has some prosperous plants.

Dozens of other instances could be cited, all tending to show that after long years of repression, the conditions of textile industries in New England are attracting the attention of those who have been primarily responsible for them. Whatever may be thought of poor management, southern competition, high cotton, and other causes assigned for the decline of the textile industry of New England, the cold fact of recent prominence has been that investors would not risk a cent of their money so long as the popular opinion was antagonistic to the industry seeking money.

This thought can be put in a dozen different ways, but it all comes down to this, in the last analysis of things. If operatives and business men, and general property owners, in a community are persistently opposed to industries in their vicinity, and are constantly using the power of law against them or "threatening the law" upon them, as labor unions and citizens have done for years in New England, a time will come when money for the carrying on of industry will not be contributed, by banks, individual investors, or others who can command the needful capital to sustain industrial operations.

It is safe to state even now that New England people have not waked up too late. The change in popular sentiment that has started will ultimately develop into real support of textile manufacturing again. This does not mean that there will not continue to be a great investment of New England capital in southern centers in years to come. But it may be set down for fact that a number of established plants in New England, some of which may have large southern branches, will be reorganized and made profitable again.

There are many plants in New England whose stockholders received regular dividends last year and will continue to receive them this year. In Fall River, where the most serious conditions have existed, the financial reports of the Pilgrim mills, showed good profits on plain combed goods, the Charlton, Sagamore, King Philip, Cornell, and other mills continue to pay, as usual. In New Bedford, where four corporations showed losses last year, four other corporations reporting within the same period showed gains and dividends. The point is that it should not be assumed that because there are many bad conditions in New England mill properties that all mill properties are valueless there.

In the next few months all things point to a recovery from the very severe depression of recent years. At present, occupation is more active in mills than it has been in three years. The largest printers of cotton goods and the largest finishing establishments are being run at night to fill the rush of orders that has come along since the first of the year. Many of the fine goods mills in New Bedford have been declining offers of business pressed upon them, because they have finally reached the point where it is not necessary to accept orders that show a loss, in the effort to maintain working organizations intact. For the next few months at least the New England outlook is better than it has been for five years.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, February 12th, 1927.

The trend of the cotton market remained upward during the past month, values scoring a further advance of about $3 per bale, due to prospects for farm relief legislation.

While it is possible that the continuance of large exports from the United States, so far this season, 6,875,000 bales against 5,471,000 to even date last season, and increasing spinners takings, which, since August 1st total 10,220,000 bales vs. 9,788,000 to corresponding date last year, would have been sustaining market features, it is doubtful if the advance would have gone so far were it not for the probability of the McNary-Haugen farm relief bill becoming a law, as, notwithstanding the large exports and larger mill takings, the world's visible supply remains large, with much more cotton still to be marketed by the South than was marketed after this time last season.

WORLD'S SPINNERS TAKINGS OF AMERICAN COTTON

SINCE AUGUST 1ST.

Bales—	This season	Last season
Northern and Canadian	1,491,000	1,874,000
Southern	3,638,000	3,410,000
Foreign	5,091,000	4,504,000
World	10,220,000	9,788,000

WORLD'S VISIBLE SUPPLY FEB. 11TH.

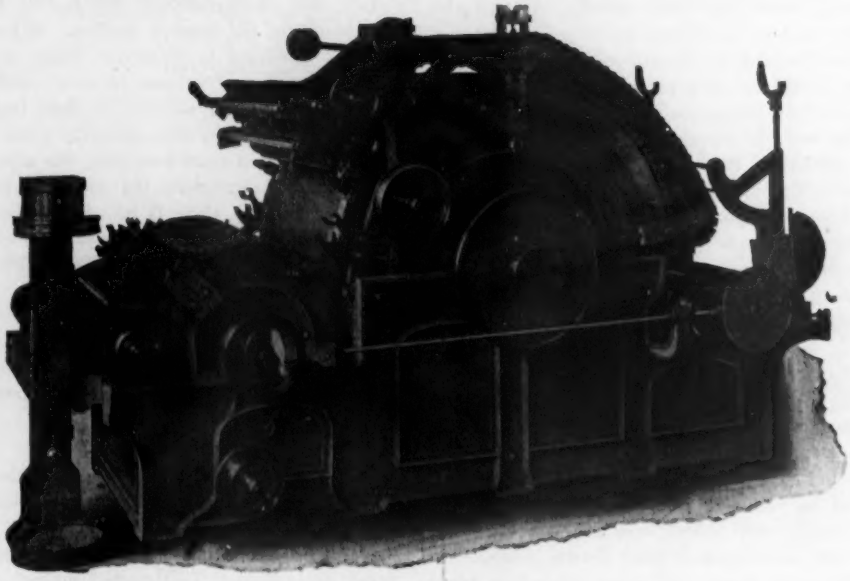
Bales—	This year	Last year
American	6,682,000	4,758,000
Other kinds	1,667,000	1,624,000
All kinds	8,349,000	6,382,000

H & B AMERICAN MACHINE CO.

Pawtucket, R. I.

Southern Office: 815 Atlanta Trust Co. Bldg., Atlanta, Ga.

COTTON MILL MACHINERY



Revolving Flat Card

OUR Cards are extensively used, and have won for themselves a high reputation for the quality and quantity of work they will do, the small percentage of waste made and their durability and simplicity.

Amongst the many features and points of special merit embodied in the machines which it would pay you to investigate are:

The Rigid Bend, mathematically correct at all stages of wear of the wire.

Perfect concentricity of Flats to Cylinder.

Arrangement for adjusting Flats whereby accuracy to the thousandth part of an inch is obtained.

Adjustable Cylinder Pedestals and Bearings.

Better quality of yarn made from the same cotton, or equally good yarn made from cheaper cotton.

Special bulletin sent on request.

Compared with last season the South marketed during the past week 283,000 bales vs. 185,000, making the in sight to date 14,826,000 against 13,440,000. On the basis of the government's crop estimate of 18,618,000 bales, plus linters, etc., the South has still to market, including last year's carry-over in the interior, about 6,768,000 bales compared with 4,310,000 on hand at this time one year ago.

Apparently there are more than ample supplies for world requirements this season, as indications are that the world's carry-over at the close of next July will likely be at least 9,000,000 bales of American cotton compared with 5,362,000 carried over at the end of last season.

It is for the purpose of caring for surpluses of crops that efforts are being made to enact farm relief legislation, such a bill having passed the Senate already, will likely be acted upon next week by the House, and if passed by that body, sent to the President for his approval or disapproval. Such a measure would virtually put the government in the banking insurance and cotton business.

The best that could be expected of such a Bureau would be for it to dispose of surpluses of crops and pay the farmer the cost of production. But if the price of production is to be based upon the average cost of efficient production, the price to be paid for surpluses may be sufficiently encouraging as to induce farmers to have large acreage especially in the cotton belt, and to plant more cotton than they originally intended, whereas an important reduction of at least 25 per cent is necessary to make possible higher prices next season.

The planting of large acreages and the making of overproductions, would keep the government busy in trying to dispose of the surpluses, and the best that the farmer may obtain for his toil would likely be the cost of production. In other words he would be working for glory, whereas if the law of supply and demand was left to govern, and if the farmer was encouraged to make drastic reduction in his acreage this year, instead of being induced to plant more than he originally intended to plant, higher, perhaps much higher prices would be assured, with no limit as to the possible advance.

If the McNary-Haugen bill passes the House, and if the President signs it, it would become operative within 45 days thereafter.

The spring meeting of the Southern Section of the American Association of Textile Chemists and Colorists will be held at the Poinsett Hotel, Greenville, S. C., on Saturday, April 16th. The list of speakers is not compiled, but it is stated by Charles H. Stone of Charlotte, who is chairman of the arrangements committee, that such subjects as "Package Dyeing in Closed Machines", "The Dyeing of Multi-Fibered Hosiery", and some phase of the dyeing and finishing of piece goods will be discussed. The entertainment feature of the program is being looked after by members of the association in Greenville, who promise something original and quite apropos, Mr. Stone announces.

TROWBRIDGE MARSTON has been elected president of the Kaumagraph Co., 350 West 31st St., New York City, succeeding Hugh R. Munro, who has been made chairman of the board of directors. George M. Porges, sales manager, has been made vice-president, and T. H. Miller is secretary and treasurer.

The mill which today has an up-to-date, efficient opening equipment has a real and valuable advantage over the mill without one. As everyone knows, cotton, when baled today, is highly compressed and with the exception of the longer staples, is usually much dirtier. Due largely to these two factors, the trend and development of picking machinery has been, and is, decidedly toward more and better opening machinery. The benefit accruing to the mill taking advantage of the progress made in opening machinery in the last few years are numerous. First and foremost is the fact that cotton is better cleaned with less injury to the staple than ever before. Secondly, by the use of proper opening machinery, it has been possible to slow down the beater speeds in the breaker and finisher pickers, this alone resulting in a further improvement in the strength of the finished product. It has been possible in many instances to eliminate beater processes in the picking room and, oftentimes, to allow a mill to use a lower grade of cotton. In addition to these facts, it is known that cotton which has been properly opened, cleaned, and bloomed makes up more even laps, the advantage of which can be noticed throughout the remaining processes. Also, by better cleaning, there is less depreciation in the working parts of cards, drawing frames, combers, roving, and spinning frames. The fact that less work is required of the cards is worth remembering.

The foregoing statements are taken from a booklet which the Whitin Machine Works, Whitinsville, Mass., have just issued, and which in continuation of this thought, presents the Whitin line of opening machinery, by illustration and description.

"Textiles and the New Generation" is the title of a booklet recently issued by the Texas Technological College at Lubbock, Texas. It is a 50-page booklet, well illustrated and full of interesting material which describes how the Texas Technological College is training the youth of America for the cotton manufacturing industry. They say very truly in their foreword that boy-power will soon be man-power. The onward march of textiles, and indeed of every major form of human activity, depends upon the injection of fresh blood and trained brains. Therefore, in designing this school and arranging it for the citizenship of the future, they have planned and builded in the broad way in order to cover the entire cotton situation.

They point out that a young man taking the textile course in the Texas Technological College has an opportunity to obtain first-hand information about the planting of cotton, the cultivation of cotton, the marketing of cotton and the manufacture of cotton in a most modern fashion and with the best type of machinery to the point where this cotton is ready to pass over the counter to the consumer in the form of a variety of fabrics.

A copy of this booklet may doubtless be secured upon application to the Texas Technological College.

W. A. HUNT, overseer of carding at the Arnall Mills, Sargent, Ga., has resigned to become overseer of carding at the Ensign Cotton Mills, Forsyth, Ga.

G. F. CHAMBLEY, formerly with the Mandeville Mills, Carrollton, Ga., has accepted the position of overseer of spinning, twisting and finishing at the Tifton Cotton Mills, Tifton, Ga.

Are You a Prey—

tO Worry—a hunter as cruel and relentless as the fiercest animal. Worry preys on the mind, dogging waking steps and haunting restless sleep. It is merciless, killing, deadly.

In the Textile Industry, Production is one of the chief haunts of worry. We cannot kill all your production worry, *but* we can kill any worry caused by uncertainty of performance in Jacquard Machines.

To you, if you are a user of Jacquards, this message is addressed. Allow us to show you a Halton Jacquard Machine with its many points of superiority—a machine that embodies the skill and experience of half a century of Jacquard building. We feel that you will be amply repaid.

We do harness building of every description.

We are prepared to furnish at short notice comber-boards, lingoes, mails, etc., Ingrain and Brussel parts.

We do replacing and repairing of Jacquard machines of other makes as well as our own.

Immediate and expert attention our guarantee.

THOMAS HALTON'S SONS

Mascher St. below Oxford

Philadelphia

H. A. Forbes, *Selling Agent*
P. O. Box 1663, Paterson, N. J.
Telephone Lambert 8592-W

"When You Install a Halton—You Install the Best"

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

J. W. CONE has been elected president of the Revolution Cotton Mills, Greensboro, N. C., succeeding Mrs. E. Sternberger. Herman Cone is vice-president, S. Sternberger secretary, and J. E. Hardin is buyer.

W. A. ERWIN was elected president of the Erwin Cotton Mills Co., West Durham, N. C., at the annual meeting, succeeding B. N. Duke. J. S. Hill is vice-president, K. P. Lewis secretary and treasurer, and W. A. Erwin, Jr., assistant secretary and treasurer.

PERRY A. SMITH, for the past three years superintendent of the cotton division of the Pacific Mills, Lyman, S. C., has resigned to accept the position of superintendent at the Ninety-Six Mills, Ninety-Six, S. C., succeeding B. R. Dickson, resigned.

W. T. STROZIER recently was made overseer of the cloth room at the Exposition Cotton Mills, Atlanta, Ga., succeeding W. C. Gibson, who resigned to accept a position in the sales division of the Arabol Mfg. Company.

H. G. REYNOLDS has succeeded T. B. Reynolds as superintendent of the Wellman Cotton Mill Co., Athens, Ala.

W. H. HALL, JR., who for some months was located in LaGrange and Newnan, Ga., has become manager of the brake lining division of the Little Falls Fibre Co. with plants in Cohoes, Waterford and Little Falls, N. Y.

R. E. WITT has been elected president of the Marble Falls Textile Mills, Marble Falls, Texas.

E. C. MITCHENER has been made assistant superintendent of the Greenville Cotton Mills, Greenville, N. C.

F. W. WARRENTON has been transferred from the Martel Mills, Asheville, N. C., to the Mercury Mills, Charlotte, N. C.

RALPH WEBBER, who for ten years has been superintendant of the Hampshire and Hawthorne spinning mills, at Clover, S. C., has resigned and will make his home in Charlotte, N. C.

GEORGE R. WEST, superintendent of the Dixie Mercerizing Company, Chattanooga, Tenn., has been promoted to the general managership.

THOMAS S. TULEY, 51 years of age, for 25 years secretary of the Louisville Cotton Mills Co., and vice-president and treasurer of the Louisville Textile Co., died on February 13th at his home, following a heart attack. He is survived by his wife, two children, and a brother, Philip S. Tuley, president of the Louisville Cotton Mills Co., and the Louisville Textile Co.

GEORGE W. PRITCHET, the genial southern manager of the Morse Chain Co., Charlotte, N. C., is back in the harness after a severe illness which kept him confined for seven months. George is now hale and hearty, and, having lost 70 pounds of flesh, is training to take on the welterweight champion of the world as an entertainment feature of a forthcoming Southern Textile Association banquet.

M. RAY HARDEN, graduate of North Carolina State College, recently resigned as overseer at the Aurora Cotton Mills, Burlington, N. C., to accept a position as assistant superintendent of the Delgado Cotton Mill, Wilmington, N. C.

T. M. MANLEY, who has been engineer for the Morse Chain Company, Ithaca, N. Y., for eighteen years, has been transferred to the Charlotte office of the company, and Harry E. Matthews, who has been connected with the Charlotte office for a number of years, has been transferred to the Ithaca office and will probably be there for three or four months.

L. H. HOMBLY has been made superintendent of the mercerizing plant of the Dixie Mercerizing Company, Chattanooga, Tenn.

CARTTER LUPTON has been elected president of the Dixie Mercerizing Company, Chattanooga, succeeding his father J. T. Lupton.

JOHN W. LONG recently became superintendent of the Hawthorne Mills, Clover, S. C. He has been superintendent of the Johnston Mfg. Company, Charlotte, N. C.

N. C. CROLLEY has been promoted to overseer of spinning at the Hermitage Cotton Mills, Camden, S. C.

S. B. HAMMOND has become overseer of weaving at the Shelbyville Mills, Shelbyville, Tenn.

EDGAR MITCHELL, up until two years ago overseer of the cloth room at the Lanett Mill, West Point Manufacturing Co., West Point, Ga., has accepted a similar position at the F. W. Poe Mfg. Company, Greenville, S. C.

J. L. BROWN has become overseer of weaving at the Henrietta Mills, Caroleen, N. C. He formerly held a similar position at the Cannon Mills, Concord, N. C.

W. B. SHANNON has become overseer of weaving for the Grace Cotton Mills, Rutherfordton, N. C.

H. E. REESE has been transferred to the southern office of the Link-Belt Company, at Charlotte, N. C,

CHARLES H. STONE has opened his own business in dyestuffs and chemicals, and has taken temporary offices in the Johnston Building, Charlotte, N. C. Later he plans to equip an office, warehouse and laboratory. Mr. Stone is one of the best known figures in the dye and chemical industry of the South, having been in this line for more than twenty years.

B. R. DICKSON, who resigned as superintendent of the Ninety-Six Cotton Mills, Ninety-Six, S. C., has taken a similar position with the Panola Mills, Greenwood, S. C., succeeding J. L. Williams.

G. W. Johnson has been transferred to the superintendency of Cochran Cotton Mill No. 2 at Hawkinsville, Ga.

J. T. REEVES, overseer of carding, Mill No. 2, Bibb Mfg. Co., Macon, Ga. died on February 3rd following an acute attack of appendicitis.

"Every Knot a Weaver's Knot"

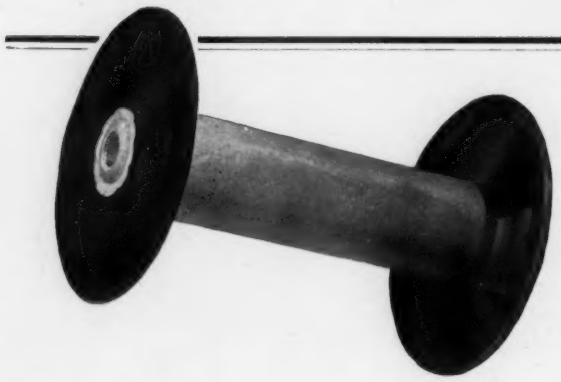
The weaver's knot causes less trouble in the processes which follow spooling. RESULT—better product and greater production at lower cost.

LOW-COST PRODUCTION—
that's the purpose and proven achievement of Barber-Colman Automatic Spoolers and High Speed Warpers. Save half the labor cost and half the floor space usually required for spooling and warping —and improve the quality of the warps. Low and uniform tension and 'Every Knot a Weaver's Knot' will automatically increase weave room production.

BARBER-COLMAN COMPANY

GENERAL OFFICES AND PLANT
ROCKFORD, ILL., U. S. A.

FRAMINGHAM, MASS. GREENVILLE, S. C.



This laboratory test is typical of the many exacting experiments which our engineers conduct to maintain the high standard of U S Products.

When we make a statement regarding U S Bobbins, Shuttles, or Spools, you can be sure that what we say is proven by tests and backed by the entire resources of this organization.

BRANCH OFFICES

GREENVILLE, S. C.

HIGH POINT, N. C.
PHILADELPHIA, PA
ATLANTA, GA.

Who Said These Spools Can't Stand A 1000-pound Pull?

When we recently published an advertisement stating that half-a-ton pull won't budge the heads of U S Vulcanized Fibre Head Warper Spools, many mill men who had never used these spools remarked, "That's what they all say. Every manufacturer claims his spool is the best."

To furnish you with unbiased proof of the superior strength of U S Vulcanized Fibre Head Warper Spools, we are printing this actual photograph of a standard U S 4" x 6" Vulcanized Fibre Head Warper Spool being tested in the laboratory of Brown University. These spools withstand a strain of 1200 to 1400 pounds before letting go. This is 200 to 400 pounds above the breaking point of all other constructions similarly tested. Surely this is convincing proof that our claims for the strength of U S Vulcanized Fibre Head Warper Spools are backed by the spools themselves.

This tremendous holding power has been a feature of U S Fibre Head Warper Spools for over ten years, and is the result of an *improved* method of locking the heads to the barrel. A tenon on the barrel extends through the head of the spool. A tapered Dogwood Bushing is driven into the hollow end, forcing the tenon outward and locking into projections cut on the fibre heads (a special feature of the U S Spool). The wedge is bone-dry when pressed in and soon absorbs moisture to the normal content of wood and expands, making the joint between the head and barrel more solid than one-piece construction.

Consider the advantages of using spools with heads that will not warp in regular mill usage, come off or apart, crack or sliver. U. S. vulcanized Fibre Head Warper Spools are so guaranteed in construction and are further guaranteed to give long service and satisfaction. These advantages coupled with the U S guarantee make U S Vulcanized Fibre Head Warper Spools a good investment even for the mill which buys strictly on price.

You want spools like these. Why not order yours to-day?

WRITE, PHONE, OR WIRE!

U S Bobbin & Shuttle Co.

PROVIDENCE, R. I.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES

AN OLD TIMER SAYS

In working with zest and giving his best,
Just for the pleasure of the giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

"Hey, Jim! Where are you going in such a hurry?"

"Don't stop me Old Timer. I have done the biggest thing in my life and I must hurry and get the papers fixed up."

"Papers fixed up! What kind of papers Jim?"

"Darned if I can remember all of the law names they told me, but something about quitting the claim—cattle mortgage and a lot of other things like that."

"You mean chattel mortgage and you mean quit claim deed instead of quitting the claim—but you must not give a chattle mortgage on anything you have. You are not broke are you? And you must not take a quit claim deed unless you have bought something.

"Now look here Jim, have you actually bought something and are you going to get the deed transferred, etc?"

"Sure I have. Haven't you been rubbing it into me for the past fifteen years about not having anything? Well now you just watch my dust Old Timer.

"The wife and myself have been watching that little bungalow the real estate people are building out on the east side, and the more we watched it grow the more we wanted it, so by gravy we just bought it, and we have made up our minds to save every nickel we can. You know I haven't taken a chew since stopping time. We are going to save—"

"Wait a minute Jim! You put about a half plug in your mouth just a minute ago."

"Did I? Well darn my hide, I did not know it. Well, guess I might as well chew it now to get my money's worth."

"Say Jim, old pal, if you have bought something, that is the best news you have told me since you got promoted, but don't be so confounded excited—that house is not going to run off; and you seem to be mixed up a little in your understanding of the few points of law that you should have as you begin to own property. In the first place, who is your lawyer?"

"Lawyer! What in Sam Hill do you think I need a lawyer for? Besides, we are going to need every dollar we can scrape up to make the payment, and lawyers cost money."

"Hold your horses now Jim and take a little advice. Don't ever buy any property of any kind without having a good lawyer to guarantee the title for you. He may charge you $25.00, but he may save you $2500. At any rate don't take the risk of buying any real estate without employing a good lawyer (not a jack leg lawyer, but a good one) to see that all your papers are fixed up according to the requirements of the laws of the state you live in.

"What did you agree to pay for the house and lot Jim?"

"We finally got him down to $5,000, and we are going to pay $1,000 cash and he is going to take a mortgage for the balance and we are going to pay $15.00 per week on it."

"What interest does the mortgage carry Jim?" "I think he said 8 per cent, Old Timer."

"Yes and he will very likely let you pay the $15.00 per week and only credit your payments at the end of the year."

"You are wrong there Old Timer. He said he would give us a receipt each week to show what we had paid."

"Well Jim, let me explain how you can save some interest on that mortgage. Suppose you go up to the Building and Loan Association and ask them how much they will loan you on that house. They will very likely loan you about $3,000. Then you take out 30 shares of Building and Loan and give the man you buy from a mortgage to run one year, telling him that as soon as Building and Loan grants your loan you will pay him the $3,000 and then you will give him a second mortgage to cover the balance.

"Then you make your payments to the Building and Loan and he gets the $3,000 they let you have, and this with the $1,000 cash you are going to pay, will give him the cash he has tied up in the property and some profit too. He will be glad to make that kind of trade with you because he can take the money and build another house to sell to someone else.

"Your Building and Loan will be paid up in about 330 weeks and the money you have been paying has been drawing interest, therefore it will not cost you but about half as much interest as you would have paid the man you bought from.

"Now don't act a fool Jim and move into the house, because you are getting a house at the mill for much less rent than your new house will bring, so rent it to some boob who will never have anything anyway and let him help you pay for it.

"Your $15.00 per week which you intended to pay the real estate man and the $25.00 per month the house will

Extra Helpers

Loose Connections

Complicated Box Design

Complicated Installations

Such Thoughts Do Not Trouble KONDU-BOX Users

Threading

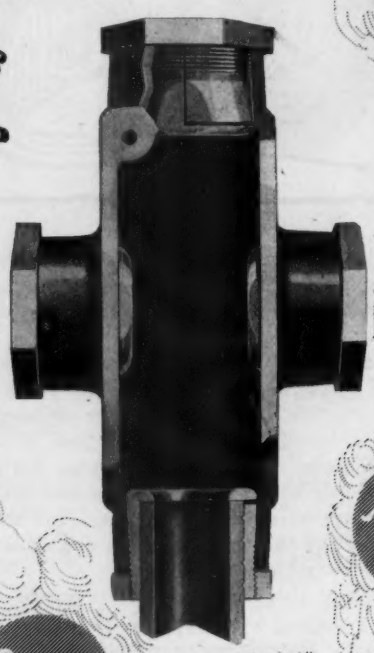
Weakened Conduit Walls

Bad Grounding

Lost Time

Many Tools

Excessive Fittings



THE textile mill superintendent who is contemplating new conduit installations need not worry about these troubles.

When Kondu-Box is used he can do better rigid conduit jobs in half the usual time. Kondu-Box is simplicity itself. He can do with it in hours work that formerly required days. Cut the conduit, ream off the burr inside, bend, if needed, hang permanently, and slip on the Kondu-Box. Tighten the locknut and the installation is made. The more complicated the job, the greater the saving.

Continuous grounding is assured by rings which cut into the enamel of the conduit and lodge in the metal.

The real story of Kondu-Box is told in our booklet, "A Message to You of Economic Importance." Send for it along with request for free samples of Kondu Fittings.

ERIE MALLEABLE IRON CO., *Kondu Div.,* **ERIE, PA**

New York Pittsburgh St. Louis Boston Detroit Chicago Philadelphia Cincinnati Cleveland Kansas City Baltimore

West Coast Distributors:
J. G. Pomeroy Co., Los Angeles and San Francisco, Cal.
Fred E. Staible, Denver, Colo., and Salt Lake City, Utah.
C. R. Dederick, Portland, Ore., and Seattle, Wash.

Southern Representative: E. E. Dawes, Atlanta, Ga.

KONDU-BOX

REGISTERED U. S. PATENT OFFICE—REGISTERED IN CANADA

THE THREADLESS CONDUIT FITTING

rent for will enable you to soon pay off that $1,000 second mortgage. Then you can buy another house and lot on the same plan.

"If you will only keep it up Jim, in a few years you will soon own enough property to bring you in an independent income."

"Thanks, Old Timer. Guess I'll just do it that way."

"Jim, if I had known you intended to buy that house I am quite sure I could have saved you more money by advising you to buy the lot and have the house built yourself."

"I have no time to look after building a house Old Timer. I have a job to run and it takes every minute of my time."

"Sure it does Jim, but let me tell you what I had in mind anyway.

."You say you have $1,000 cash to pay on the house and lot you have just bought."

"Yes."

"Well with $1,000 cash any man can build a $4,000 house on a lot which will cost $1,000. This will give him a $5,000 piece of property.

"Having the property in your own name is the secret of being able to build on a small margin in perfect safety.

"As owner of the property you are at liberty to arrange a first mortgage for half value and a second mortgage for half the first or more.

"So you see a man can build a home if he only has 20 per cent of the total cost of the house and lot.

"For example: Get an option on the lot and make a small payment on it. Take the plans of your house to a banker and ask for a first mortgage loan of $2750.00, which is half the reasonable value of the house and lot when it is built. Any house built at reasonable cost is worth 10 per cent more than the house and lot cost as soon as it is completed.

"With a first mortgage of $2750.00 you can ask for a second mortgage of $1,375.00 and you would have a proposition like this:

First mortgage	$2,750.00
Second mortgage	1,375.00
Your cash	1,000.00
	5,125.00

"This would give you $125.00 more than you had to have, so you could offer the banker $125.00 discount on the second mortgage which would make it attractive enough for him to make you the loans.

"Now you can have those mortgages drawn up to suit the way you want to pay them off.

"My suggestion would be to draw the first mortgage for five years, which is known as a 'Term' mortgage and the second mortgage an 'Installment' mortgage, which can be paid in monthly installments.

"$40.00 per month will take care of the interest on the first mortgage and keep up the installments on the second mortgage. If the banker will not loan you the second mortgage very likely the lumber dealer will let you have the material for a second mortgage when he is told you are going to pay off the second mortgage first.

"Then there are the big insurance companies which are glad to make loans to people who take out insurance with them and they will arrange for you to pay them monthly.

"But generally your best chance is with the Building and Loan, especially if you are in or near a large town where the Building and Loan operates in a large way."

"Good Lord! Old Timer. If $40.00 per month will carry the payments on a $5,000.00 home and the house will rent for $25.00 or more per month, I can buy two instead of one."

"Well Jim, it is just like I have been telling you for 15 years; it is a dead cinch that 'If you never buy anything you will never own anything'."

"What? How's that? Well at any rate that is one thing that you have told me which I can understand. If I never buy anything I will never own anything.

"Say, who do you think you are talking to anyway—a two year old?"

"No Jim, but we have some very wise brother overseers and superintendents who have never yet been able to understand that simple statement."

In celebration of its 50th anniversary, the Central India Spinning, Weaving & Manufacturing Co., Ltd., which operates the Empress Mills at Nagpur, India, has issued a Golden Jubilee booklet which gives a short history of the company, as well as interesting facts about the organization at the present time. Organized in 1877, with a small plant, this company now operates five major plants containing 100,352 spindles and 2,220 looms, as well as a waste plant, ginning facilities, etc. It also controls the selling of its products. It is very interesting to learn from the booklet of the progressiveness and modern methods utilized in these Indian mills. The volume is well illustrated, and gives a good insight into India's textile industry through describing this outstanding example. The head office of the company is located at Bombay House, Bruce Street, Fort, Bombay, India.

An acid blue recommended for the dyeing of woolen piece goods, yarns, felt, shoddy, etc., in all types of machines has been announced by the Newport Chemical Works, Inc., under the name of the Newport Fast Acid Blue SR. It is said to possess good general fastness properties, especially to light and salt water, and to be of special value for shading chrome navies and blacks and for dyeing wool in union materials from neutral baths. Effect threads of cotton and rayon, according to the description, are left white; while silk effects are only slightly stained.

The Anchor Post Iron Works, manufacturers of Anchor fences, railings and gates, and Anchor all steel trucks, have changed their company name to Anchor Post Fence Company. This change became effective on January 1, 1927. The address of the company is 9 East 38th St., New York City.

Tolhurst Machine Works, Troy, New York, manufacturers of extractors, advise that a man using the names Cummings, Butler and Burton, variously, has been representing himself as an employee or a former employee of that company, using business cards bearing the company's name and address, together with the name Cummings. The Tolhurst Company states that the man is an impostor, and is not and has never been employed by that concern under the name of Cummings.

NECESSITY *may* be "the Mother of Invention"

but, in Business, her offspring are often the hurried results of Ignorance and Fear

Successful Business shapes its progress on *desirable* action rather than *necessary* procedure. Most plans, or actions, become *necessary* only when the *desirable* thing to do has been overlooked, or too long delayed. And while stark *necessity,* fear of failure, or loss of prestige, often stirs the mental and physical forces of a business into "inventive" action; such action is probably only something competitors with vision and foresight have been doing all along—the *desirable* thing to do.

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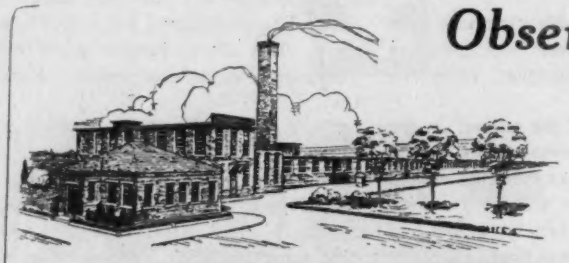

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HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

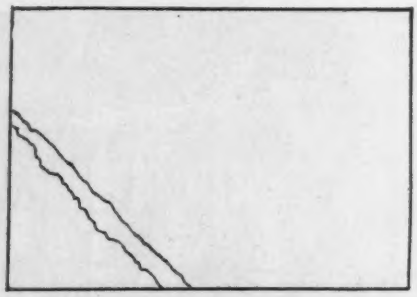
We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

What Causes Wavy Twill?

EDITOR COTTON:

I would like to ask a question on weaving in the "How Other Men Manage" department of COTTON.

In weaving a regular three-harness drill or a regular four-harness twill, what causes the twill to be wavy? The



wavy effect is not across the cloth in line with the filling, but in on the angle with the twill. The accompanying drawing will illustrate what I mean.

I would be glad to have any of your readers answer this by giving any information they can as to the probable causes of this difficulty and the remedies therefor.

P. W. (GA.)

Cone Belt for Fly Frames.

EDITOR COTTON:

Seems to me I read an article sometime ago in the discussion department by a contributor who claims that a special cone belt is necessary on the bobbin lead frame.

This same contributor wants to know why it is that a cone belt wears out in one tenth the time, even though its speed in feet per minute is only one tenth that of the belt driving the speeder. This is not his exact wording, but it is his general idea, and is close enough for practical purposes.

If I remember correctly, the point he is trying to emphasize is, that the cone belt on a bobbin frame is so much overworked in comparison to the cone belt on the flyer lead frames, that a special cone belt is necessary on the bobbin lead, to take care of the excess friction produced.

This contributor is dead wrong when he states that a special cone belt is necessary on a bobbin lead frame. The bobbin lead frame has been in use for a good many years, but the new type endless cone belts are a comparatively new *improvement*. Note that last word again. Improvement, not *necessity*.

The cones were driven on a bobbin lead frame by a belt long before the new double type belts were thought of. Doesn't that easily prove that the special cone belt claim is groundless? The writer has personally had experience in using plain ordinary every day single ply leather belting, clamped with Wilson belt hooks, as cone belts. At one time, for some reason or other, the office neglected to order the type belt we had been using and we were forced to resort to single ply belting for some time.

These improvised belts ran for some months, on several frames, without any trouble or inconvenience whatever. I also know of one or two very modern plants where common belting was in use up to a very short time ago as cone belts. Does any of this indicate that special cone belts are necessary on the bobbin lead frame?

It must be admitted that the double belts now being used are a decided improvement over a clamped or laced belt. I should say about as big an improvement as the *bobbin lead is over the flyer lead.* The bobbin lead isn't a necessity, but it is certainly an improvement.

Answering his question as to why the cone belt lasts only about one tenth as long as the driving belt, although the cone belt runs only about one tenth as fast as the driving belt does:

The cone belt wears so rapidly because it runs on such a very small diameter. It is continually encircling a diameter of from 3½ to 7-inches or thereabouts, whereas the driving belt is called upon to encircle a pulley of not less than 14-inches in diameter as a rule.

Ask a professor of science to explain this and see if he doesn't mention something about the "cohesive properties of matter" or some such "high hat" stuff.

Anyhow, what I am trying to put over is this:—Take the eraser from your desk and bend it over a roving frame bobbin. Now take the aforesaid eraser and bend it tightly around your pencil. Do you get what I am driving at now?

One more thing that helps to shorten the life of a cone belt. Ever notice how it wears on the side through constant friction with the cone belt slipper before it breaks?

C. C. (N. J.)

C. W. MCSWAIN has been elected general manager of the Pendleton Manufacturing Company, Autun, S. C., succeeding the late Mr. Aull. Mr. McSwain has had a wide experience in textile work. He resigned as southern manager of the American Casablancas Corporation to accept the new position. He was at one time connected with the textile department of Clemson College and later with the Parker school district textile department at Greenville, S. C.

The jury of cold production figures brought this verdict after trial

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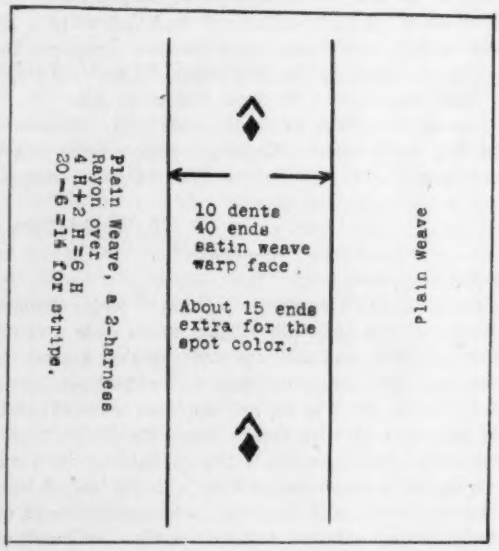
COOPER HEWITT

BETTER THAN DAYLIGHT

Asks Information on Designing.

EDITOR COTTON:

I am studying designing and would like to know how to construct the weave as per sketch on a 20-harness dobby. There is a plain ground with a satin stripe weaving warp face. The color weaves satin under the stripe and is covered by the warp face except when making the spot. The spot is a satin weave. While the spot is being made the white weaves under the spot satin but at the side and



around the spot the white warp satin. I don't see how the white or the color is made to weave warp face and then filling face. That is, the warp satin will be weaving warp face around the spot till the spot starts to come up, when it drops, according to the rising color, thus it is weaving both warp and weft satin in the stripe at the same time.

Any information your readers can give me will be appreciated. CONTRIBUTOR No. 1041.

Wishes Layout for Cards.

EDITOR COTTON:

I have a question I would like to ask through your discussion department. Which is the better layout for cards, a 12-ounce lap with a short draft, say about 117, or a 16-ounce lap with a draft of 140—finished sliver to weigh 52 grains?

I should be glad to hear from some good practical men on this subject.

R. N. (N. C.)

Holding Yarn and Cloth Weights Even.

EDITOR COTTON:

This is in reply to the question of "Contributor No. 1034", appearing in the February issue of COTTON, in which he outlines the difficulty he is having with reference to keeping his yarn and cloth weights. His letter gave a pretty complete description of his conditions, and I suggest a reference to it before reading this reply.

It seems that "Contributor No. 1034" has good reasons for having considerable trouble in keeping his roving, yarn, and cloth weights within reasonable limits. According to his statement, he sometimes has about 65 per cent relative humidity for a portion of the working day, and about 37 per cent relative humidity at other hours of the day. This variation of 28 per cent relative humidity being largely due to the fact that the humidifier system is not of sufficient capacity to hold the relative humidity constant against outside changes in weather conditions.

It is not unusual for outside relative humidities to vary as much as 28 per cent in a working day. I have before me a weekly chart showing the relative humidities for the week ending December 6th. The high and low readings for the working day—6:30 A. M. to 5:30 P. M.—are:

		Low.	High.	Variation.
Monday	29th	49 per cent	78 per cent	29 per cent
Tuesday	30th	41 per cent	70 per cent	29 per cent
Wednesday	1st	30 per cent	49 per cent	19 per cent
Thursday	2nd	33 per cent	50 per cent	17 per cent
Friday	3rd	17 per cent	65 per cent	48 per cent

These variations may be taken as normal for this time of the year. The variation is not the same for all localities, but this may be considered a fairly representative condition.

A new humidifier system would naturally be the first suggestion for overcoming this variation in relative humidity, and troubles resulting therefrom, but, as "Contributor No. 1034" says, he is after getting all possible out of his present inadequate system, and wants suggestions that will help him to get along with same until he can get the new system, I believe that the most help will come from a picker lap weight control system.

Changes in picker room relative humidities are approximately the same as changes of outside relative humidities in cases where the picker room is not equipped with humidifiers. As the relative humidity changes in the picker room the weight of the lap changes. For instance, at 80 degrees dry bulb temperature, and 37 per cent relative humidity, the picker lap will be composed of approximately 5 per cent water and 95 per cent dry cotton. Again, at 80 degrees dry bulb temperature, and 65 per cent relative huimidity, the lap will be composed of about 8½ per cent water and 91½ per cent dry cotton. Taking 50-pound laps as a basis of figuring, in the case where there is 37 per cent in the room, there will be 47½ pounds of dry cotton and 2½ pounds of water in the 50 pound lap. In the case where there is 65 per cent relative humidity in the room, there will be 45¾ pounds of dry cotton and 4¼ pounds of water, in the 50 pound lap. There is then, in the second case, 1¾ pounds more water to the 50-pound lap than in the first case. Both of these laps will dry out to the same moisture content by the time they get through the cards. The card sliver made from the lap that had the most dry cotton in it will then be heavier than the sliver made from the other lap. If instead of changing the amount of dry cotton in the lap with each of these frequent changes of relative humidity, "Contributor No. 1034" will cut some small weights and use these weights to balance against the different amounts of water in the lap, he will be able to do away with a big portion of the draft gear changes in the card room, and consequently with a big portion of his variation in weights.

To get this system of weight control in use it will be necessary to cut weights to size 2 ounces, 4 ounces, etc.,

on up to 40 ounces, and put a wire through these weights so they can be hung on the scales used in weighing the finisher picker lap. Also hang an ordinary hair hygrometer (precision hygrometer) near the back of the finisher pickers, where it will be handy for the picker tender to look at the hygrometer reading about once every half hour. With the hygrometer and weights, and the accompanying table, it will then be possible to get the system in use:

When the precision Hygrometer reads this	Hang this amount of weights on the swinging scales.
Per cent.	Pounds.
35 per cent	2.50 pounds
38 per cent	2.38 pounds
40 per cent	2.25 pounds
42 per cent	2.13 pounds
45 per cent	2.00 pounds
47 per cent	1.88 pounds
49 per cent	1.75 pounds
51 per cent	1.63 pounds
54 per cent	1.50 pounds
56 per cent	1.37 pounds
57 per cent	1.25 pounds
59 per cent	1.13 pounds
61 per cent	1.00 pounds
63 per cent	.88 pounds
64 per cent	.75 pounds
66 per cent	.63 pounds
68 per cent	.50 pounds
69 per cent	.37 pounds
71 per cent	.25 pounds
72 per cent	.13 pounds
73 per cent and above	None

This table is based on a lap weight of 50 pounds, exclusive of the lap stick. If it is desired to use the table for other size laps it can be changed accordingly.

The following suggestions will be helpful if not already in use:

Hold the lap weight to within one quarter pound up or down from the standard.

After stripping a card allow the sliver to run on the floor for at least three minutes so it will have time to come back to normal weight before being pieced up.

Make changes for the control of weights at the drawing as far as possible. It is customary in some mills to change each drawing frame separately, when the sliver is heavy or light, and so have different draft gears on each frame. It is believed that a much better system is to keep the draft gears on all the frames the same, and to change only when the average weight for all the frames is too heavy, or too light.

When weighing roving to determine whether or not the size is correct, do not take 12 yard wrappings, but take 120 yards from each set of four bobbins. This will be sufficient to give a good average and will not take many extra seconds to do. Where there are four or more frames on each hank roving the writer has found that two bobbins taken from each frame, and 120 yard weighings from each set of four bobbins, gave an average weight that could be used for fair results. What was said in regard to keeping all drawing frames on the same draft gear, applies as well for the roving frames. Each frame on the same hank roving should use the same draft gears. If it is necessary to change draft to hold weights, then change all of the frames at the same time.

"Contributor No. 1034" is correct when he says that cotton will not draw alike under the condition referred to of 37 per cent relative humidity in the afternoon, and 65 per cent in the morning. It is my belief that cotton spun at 65 per cent will draft heavier than the same cotton spun at 37 per cent relative humidity. It is sometimes said that the heavier yarn, made with the high relative humidity, is only heavier because it contains more water, but if those who wish to prove the point will "bone-dry" some of each yarn, they will find that there is more cotton in that made at the higher relative humidity. There is more loss by fly in the case where the room is dry, but this could not account for much loss of weight.

I hope that "Contributor No. 1034" may get some aid from this feeble effort. Keeping correct weights in a cotton mill is another job that requires constant vigilance in order to stay one jump ahead.

J. W. C. (TENN.)

EDITOR COTTON:

The letter of "Contributor No. 1034," with reference to holding his yarn and cloth weights, raises some very interesting questions, and they are problems that a great many superintendents have to contend with almost continuously. To my mind, there is no problem that we hard working mill men have to solve that is any more difficult, or any more important, than the matter of holding down variations in our yarn numbers. Even with the best of humidifying equipment, and the most careful attention to every detail, there is always enough variation in numbers to cause some loss in production, and to detract from the appearance of our finished product, be it yarns or cloth. When the conditions are aggravated by poor humidifiers, worn and poorly kept machinery, then the problem assumes gigantic proportions.

I judge from "Contributor No. 1034's" statement that he is driving the "Old Plug"; that in addition to poor humidifiers he also has old and worn machinery, and with this fact in mind, will try to offer a few suggestions that it is hoped may be of some assistance to him.

First, of course, I should mention the importance of opening up enough cotton at one time to allow it all to get as nearly alike as possible in regard to moisture content, and of course to see that it is all well mixed before starting into the mill.

While most superintendents know that it is important that the hoppers on the breaker pickers be kept with the same amount of cotton in them at all times, there are plenty of mills yet who are very careless in this regard. It doesn't take a Solomon to understand that if the breaker lap has from yard to yard variations, then in spite of all the doublings possible in any mill there will be variations in the resultant yarns. In our own mill we have found a very frequent cause of these variations is the carelessness of the picker hands in laying new laps on the aprons of the intermediate and finisher pickers. I care not whose evener motion one has, or what kind of attachment is on the pickers, if in starting the new lap there is an inch lapping of the two ends, or an inch skip where the two ends fail to meet, there will be found a variation in the yard to yard weighing of the finished lap if the trouble is taken to make a weighing just at the point that the joint was made. This of course may be

only a few inches in the lap, but will be several hundred inches when it gets into the yarn.

It is comparatively easy to so adjust the evener motions so that a rather wide variation in the weights of the laps on the apron will be taken care of in such a manner as to keep the total weight of the finished lap just where it is wanted. However, when that old evener belt has to be moving up and down the cone in order to produce that correct weight, there are always short light and heavy places in the lap.

Few mills are as careful as they should be to keep every part of the evener motion well cleaned and oiled. This should be done thoroughly every Saturday at least.

In the case of "No. 1034", if he is not already doing so, he should arrange a schedule of standard weights for his finished laps, so as to make allowance for humidity variations. He says his relative humidity varies from 37 per cent to 65 per cent in one day. The regain for cotton in this case will vary from 5 per cent to 8 per cent, or in other words, a 40 pound lap would vary approximately 1¼ pounds due to variation in moisture content. In our own case we allow one half pound variation each way from standard to take care of these wide atmospheric changes. That is we change our standard weight to one half pound heavier when the relative humidity ranges around 60 per cent, and one half pound lighter when it is around 40 per cent. We know of mills that have very elaborate schedules worked out to take care of this humidity variation, but we do not believe in splitting hairs, and think that the foregoing is close enough for all practical purposes.

We have found in the case of old cards, and rather poor card settings, that there will be a wide variation in the amount of waste taken out by the different cards. While it is impossible to make old cards do exactly the same all the way through, by giving them close attention it is possible to make quite an improvement over what the average grinder will do. We have found enough difference in the flat strips alone to account for several grains variation in the sliver.

Of course it goes without saying if the end is put up too soon after stripping there will be a very wide variation in the weights. We have found as much as 40 per cent difference between the weight just before and immediately after stripping. It takes several minutes for the card to fill up enough to make it advisable to start the sliver into the can. At least two cards should be stripped while one is filling up, and even then there will be plenty of difference.

On our first drawing we find it necessary to set in one can at a time as they run out, on account of the difficulty of getting the same amount of stock in each can at the card. However, we creel an entire frame at one time on the finished drawing, and in this way eliminate nearly all of the variations caused by imperfect splicing as each can runs out.

It seems to the writer that when drawing gets old and worn that it can cause more uneven and bad work than any machine in the mill. It is very important to keep old gearing removed, so as to keep out the lost motion or back lash. The steel rollers get worn so that the collars are not round, and this causes uneven work in great quantities. About the only satisfactory remedy in this case is new gears and rolls. Fortunately they do not cost so much but that any mill can well afford to get them when they are needed. In fact, they cannot afford to fail to get them.

We have gone into some detail in regard to uneven work, while "Contributor No. 1034" seems to be more interested in controlling his general average of weights. This was done because he appears to be getting very wide variations in his weighings made from the same frame at the same time.

To answer his question as to whether or not the yarns will actually have more cotton as well as extra moisture on damp days, will say that it is our opinion and experience that it does. The stock does not draft as freely when damp as when dry, and it comes on through the rolls heavier on the damp days, even though you may make allowance for the extra moisture. This fact makes it all the harder to control weights when the mill is not properly equipped with humidifiers. When this fact is taken into consideration it also makes it somewhat of a debatable question as to whether or not the laps should be run heavier on damp days than on dry days. My opinion is that if there were any good reason to expect the damp weather to continue for several days, that it would then be a mistake to run the laps on the heavy side, because if it were not done, the fact that the damp stock naturally drafts heavier would take care of the extra moisture that was in it and that would later dry out in the spinning room. So you see there are several angles to the question, all of which have to be taken into consideration, and good judgment used to meet the special conditions as they arise.

The writer requires the overseer of the spinning room to furnish the overseer of the card room a copy of his warper beam weights every morning, and these weights have a great deal to do with deciding whether it is wise to heavy or lighten a tooth on the speeder roving. The slasher room man is also required to use as much care as he can in selecting his beams for a set. He knows the standard weight of each style, and if he has more than a set ahead of the slasher, and there are some beams too heavy and some too light, then he mixes the heavy and light ones so as to get as near the standard total weight for the set as is possible for him to do.

In the average mill there is more variation in the amount of size added from set to set than is in the yarns. We have known of many cases where one set will show a gain of 12 per cent, and the very next one run jump up to 18 per cent. In fact, this is a very common occurrence in the majority of mills. Say the warp represents one half of the cloth, then this would mean a 3 per cent variation right there, which in the case of four yard sheeting would be 12 points, or enough to cause the bale to be laid out as too light to bale as standard weight goods.

Fortunately for the man who is responsible for holding the weights correct, a great deal of the size added is knocked off, and the more that is added usually the more that is knocked off. This fact prevents lots of poor superintendents from going to the mad house early in life. However, this same size variation does cause lots of gray hairs, and in the writer's opinion is responsible for more cloth variations than all other causes combined. There are so many causes for size variation that I shall not attempt to even *name* all of them here, as I have already written far more than I intended when I started. The first thing is to weigh all starch and compound, and be sure to get

the same amount in every kettle; also to get the same amount of water in each kettle. The best way to do this is to start with a small enough amount to make it necessary to add some every time after the kettle is cooked. A recording thermometer should be used to show that every kettle is cooked the same length of time and at the same temperature. The size should be kept at the same depth in the size box at all times, which can best be done with a circulating system. The temperature of the size box should be automatically controlled so as to keep it at the same temperature all the time. The blankets should be kept in good condition at all times. The temperature of the cylinders should be kept as near one thing as possible when running a given style of goods. The speed of the slasher should not be altered any more than is absolutely necessary, for the faster you run, the more size you put on. Sometimes in the same mill you will find different amounts of weights on the squeeze rolls, and some of the rolls heavier than the others, even though they are all supposed to be doing the same work. This of course causes variations in amount of size added. Everything about the slasher should be made as automatic as possible, so as to eliminate the human element as much as is practical.

There are many other things that could be said on this all important subject, but I fear I have overstepped all bounds of reason in taking up so much space already.

CONTRIBUTOR No. 483.

Why Does the Breaking Strength Vary?

EDITOR COTTON:

We are making a cloth 60 sley, 56 picks, 12.25s warp and 12.25s filling, in three widths: 72-inch 1.10, 81-inch .98, and 90-inch .88. These goods are all made from the same yarns, same filling, dressed on the same slasher, same size, same harness and reed. Yet the breaking strength of the cloth, warp way, is stronger in the 72-inch cloth than in the wider widths.

We have figured this from every angle and we can see no reason for this difference in the breaking strength. We should be pleased to see any comments from your readers, giving any experiences they may have along this line, or offering any solution for this condition.

CONTRIBUTOR No. 1045.

Why Presser Pad Pressure Varies.

EDITOR COTTON:

In the December issue, on page 155, there is a question from "Contributor No. 231" who asks how it is possible that we get a variable pressure on the presser pad of roving frame flyers, when the flyer rotates at a constant speed. He says to remember that the flyers are of a bobbin-lead frame. In this question, the lead of the frame makes absolutely no difference.

The palm or pad of a flyer exerts a variable pressure on the bobbin as the roving is being wound on it. The palm is on the end of an arm that is connected to a vertical rod. This rod lays along the outside of the hollow leg of the flyer, it swings around this leg from the outside inward as the palm swings outward. The pressure which the palm exerts on the bobbin is caused by centrifugal force tending to move this vertical rod outward. The greater the diameter of the circle that this rod makes, when rotating at a constant speed, the greater the centrifugal force will be tending to move it outward; therefore, the greater the pressure we get on the palm. This rod is at its outmost position when the bobbin is empty, and is at its inmost position when the bobbin is full. From this it is easily seen that the pressure on the empty bobbin will be greater than the pressure on a full bobbin. It can also be easily seen that the pressure will decrease at a constant rate from the beginning to the end of the doff.

This contributor also wished to know why we could not have a speeder constructed with a variable speed coming to the spindle instead of the bobbin. Such a machine would not be practical as the twist per inch in the roving would not be constant.

L. A. S. (MASS.)

Roving Frame Cones.

EDITOR COTTON:

In the December 1926 issue of COTTON I noticed an article by "Wash (R. I.)" on "Roving Frame Cones and Equations," or rather I should say, simply a repetition of some of his *old stuff*—questions which some of our friends in this department have answered already—but as "Contributor No. 231" states in this same issue "'Wash' likes to question the other fellow a lot," and that would be perfectly in order if he would give the informer some credit instead of declaring that the other fellow is wrong most of the time.

However, in previous issues of COTTON I have done my little best to correct "Wash" on a few "slip-ups" he has made, and rather than bother with the old questions he sets for "H. H. Y. (China)" I will deal in this letter with a portion of this "Roving Frame Cone" discussion, which I have not seen dealt with in this department, and allow the article by "Contributor No. 231" to suffice as a complete answer to all "Wash" wants to know.

Now in these articles on roving frame cones I notice a great many remarks, statements, etc., about the fact that the cones of roving frames are really as so many pairs of pulleys or strings of pulleys, and every speeder man knows that separate layers of roving require a certain pair of this "string of pulleys" accompanied by a belt of proper tension to wind on each separate layer on a bobbin.

But I think, although I may be wrong, that most of these fellows have not yet learned the rule for finding these aforesaid separate pulleys or diameters by calculation, so it is my intention to try to explain the method as I was taught years ago, and in doing so, I will deal with a question which I was given at a City and Guilds of London Institute examination a few years ago, which was answered as follows:

First of all, the questions read similar to this.

The end diameters of the cone drums of a roving frame are respectively 7-inches and 3.5-inches, and the bobbin when empty is 1-inch and when full 4-inches in diameter.

What diameter should the belt be on when the bobbin is respectively 2-inches and 3-inches in diameter?

How you would arrive at the result?

That is the question as nearly correct as I can remember.

Of course to make this calculation it is necessary to assume certain figures or data in addition to that supplied

in the question. So let us assume that the top cone has a fixed or constant speed of 200 revolutions per minute and say the length of both cones are 32-inches.

Again we assume that the cone belt moves along the cones at a rate of 1 inch for every increase in bobbin diameter of say 1/8 inch, so that as the bobbins increase from 1 inch to 4 inches, an increase of 3 inches, the belt will have moved 24 inches when the full diameter of 4 inches is attained, thus leaving a small amount of unused cone. The initial speed of the bottom cone will be as follows:

$$\frac{300 \times 7 \text{ diameter of top cone}}{3.5 \text{ diameter of bottom cone}} = 600 \text{ r.p.m.}$$

When the bobbin has become 1 1/8 inch in diameter the cone belt will have moved 1 inch and the speed of the bottom cone will be:

$$\frac{600 \times 1}{1\ 1/8} = 533.3 \text{ r.p.m.}$$

Assuming in the same way that the bobbin is 2 inches in diameter as stated in the question, then

$$\frac{600 \times 1}{2} = 300 \text{ r.p.m. of bottom cone.}$$

And for a 3 inch diameter of bobbin we get

$$\frac{600 \times 1}{3} = 200 \text{ revolutions of bottom cone.}$$

By the application of an old rule of arithmetic, namely division into proportional parts, we are now able to find the new diameter of the bottom cone. The rule may be stated as follows:

The sum of the revolutions of the two cones is to the revolutions of the top cone as the sum of the diameters of the two cones is to the diameter of the bottom cone. Hence

600 : 300 : : 10.5 inches: X.

$10.5 \times 300 \div 600 = 5.25$ inches = diameter of bottom cone for 2 inches diameter of bobbin.

Of course it is clearly understood that in order to maintain the belt under equal tension in all positions the sum of the diameters of both cones must always be equal, that is 10.5 inches so that the diameter of the top cone for a 2 inch bobbin must be $10.5 - 5.25 = 5.25$ inches.

And the same way for a 3-inch bobbin. 500 : 300 : : 10.5 : 6.3 inches diameter of the bottom cone for a 3 inch bobbin. And $10.5 - 6.3 = 4.2$ inches as the diameter of the top cone.

The foregoing is the complete method of calculating speeds and diameters of cones used on roving frames, and of course there are other methods of arriving at the same result, but I think this one will help to fill the need, and I hope some of our friends will benefit by it.

Of course in assuming the various times at the beginning, we could have also assumed that the belt traveled the full length of the cones when the 4-inch diameter was attained, but this, of course, would either mean a greater movement of the belt at each reversal of the carriage or lifter, or else using shorter cones.

So much for cone drums. Still, as I write, I am reminded of a problem set for me a few years ago by a mill manager in England, and one which I am sure will interest most of our friends, especially the roving frame debaters, this problem dealing as it does with roving frames, and their principal function, winding on.

These are the particulars as they were supplied to me:

In the Howard and Bullough differential motion as applied on a certain slubber (English make), the revolutions per minute of the driving shaft are 327. Please take notice that this frame was for flyer leading and the revolutions of the cone gear—or the gear which receives motion directly from the cone drums—are 380 per minute at the beginning of a set of bobbins and 95 at the finish.

This cone gear has 34 teeth and is compounded with a bevel gear of 18 teeth. The latter drives a 30 tooth bevel on the short cross shaft which on the other end has a 16 tooth bevel driving a 48 tooth bell gear. The 48 tooth bell gear fits on a large sleeve, loose on the shaft, and on this sleeve, at the other end, is a 50 tooth spur gear, which is the first in the "swing" train of gears used for driving the bobbins.

The first problem is to find the revolutions per minute of the 50 tooth spur gear, and from this we can soon ascertain the bobbin speed.

The second problem is to find the speed of the 50 tooth gear providing the frame was bobbin lead.

Here, perhaps, it is advisable to mention that with the flyer-lead frame the cone gear revolves the contrary way to the main or driving shaft, but with bobbin-lead it revolves the same way as the shaft.

In proceeding with the problem we must first of all ascertain the value of the train of gears in the differential or compound, and this will be as follows:

$$\frac{18 \times 16}{30 \times 48} = \frac{18 \times 1}{30 \times 3} = \frac{6}{30} = \frac{1}{5}$$

This value of 1/5 denotes that for every five revolutions that the cone gear loses or gains on the main shaft speed the bobbin gear loses or gains one revolution on the main shaft speed, or the revolutions of the bobbin gear

Brick Bats.

In the July 1926 issue of the Traveler Magazine we published a little article in regard to using a mixture of pulverized sulphur in the proportion of ¼-pound of sulphur to two pounds of traveler grease, for the purpose of polishing brand-new vertical twister rings or bringing back rings that had become bronzed from lack of proper lubrication.

This article caused quite a little comment and several men asked where we obtained our information, stating that it was "old stuff" and that they had either originated it themselves or had used it years ago. The man who was responsible for putting this article in the Traveler Magazine has been connected with the traveler industry for 26 years or more, and has to confess that it was the first time he had ever heard of it

However, if the article did help somebody out, we are mighty glad of it, for we make no claim for its originality.

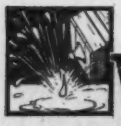
So says the house organ of the Victor Shaw Ring Traveler Company.

Don't hesitate to describe something for "How Other Men Manage" in the thought that it is "old stuff."

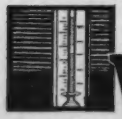
Good stuff is never old stuff.

THE EDITORS.

Where steel truck-wheels grind


Where acid spatters

Where draft-horses tug and strain


Where temperatures climb high

Where oil spills or water seeps

Where heavy loads are dropped

Where damage would be done by floating dust

Where repairing would force shut-downs

—these are some of the places in industrial service, indoors and out, which call for the fire-wrought enduring toughness of

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equal four fifths of the shaft speed plus 1/5th of the cone gear speed in a bobbin lead frame. Taking the first problem we proceed as follows:

(a) 327 r.p.m of driving shaft.

$\frac{327}{5} = 65.4$ r.p.m. lost if cone gear were stopped.

But the cone gear is moving at 380 r.p.m. the reverse way in addition to the foregoing loss. Hence:

$\frac{380}{5} = 76$ extra or winding-on revolutions lost at the beginning of the set due to flyer-lead.

$65.4 + 76 = 141.4$ revolutions total loss. And $327 - 141.4 = 185.6$ revolutions of bobbin gear at the beginning of the set with *empty bobbins.*

(b) 95 revolutions = speed of cone gear at the finish of the set, and

$\frac{95}{5} = 19$ extra revolutions lost at the finish of the set.

$65.4 + 19 = 84.4$ total loss.

Then $327 - 84.4 = 242.6$ revolutions of bobbin gear at the finish of the set.

So much for the solution in the case of a flyer-lead frame, but in the case of bobbin-lead we proceed thus:

$380 - 327 = 52$ revs. gain, and

$\frac{52}{5} = 10.4$ revolutions to be added at the beginning of the set. Hence, $327 + 10.4 = 337.6$ revolutions of the bobbin gear at the beginning of the set with the bobbin-lead.

$327 - 95 = 232$ loss of cone gear. Then $232 \div 5 = 46.4$ lost by the bobbin gear to $327 - 46.4 = 280.6$ revolutions of the bobbin gear for the full bobbin.

In conclusion I may say that I hope I have made it clear to the reader that the "value" of the Howard and Bullough differential was used in making the foregoing calculation and let it be understood that the same procedure may be taken to ascertain the various speeds, with other differential motions, but their respective values must be known and taken into account in order to find loss or gain. However, I am hoping that what I have stated may prove to be at least a little of the mathematical proof some of our friends have been demanding from each other, but on which they never seem to get any satisfaction.

D. E. (R. I.)

What Causes "Crooked Cloth."

EDITOR COTTON:

I would like to present to the readers of "How Other Men Manage" a problem that is confronting me. It is in either the beaming, slashing or weave room and refers to crooked cloth.

I am having trouble with short and long sided cloth from the looms. When we roll a cut out on the floor it is moon-sided, and reminds us of a gradual curve in the road from one end of the cut to the other. Other cuts are crooked 3 to 10 yards from the end of where it was taken off the loom at the cut mark.

I have tried many remedies, with no good results. I think the sand rollers are all right. On part of the looms they are near the breast beam; the rest of them are near the floor. The goods are three and four harness, 7s and 8s warp and 10s to 14s filling 66 to 68 threads per inch. 40 to 48 picks per inch, three ends per dent.

C. C. (N. C.)

Using Drop Wires at the Slasher.

EDITOR COTTON:

The automatic loom, with its drop-wire attachments, demands an absolutely straight warp; in fact it is imperative that in the process of slashing everything possible must be done to put the yarn on the beam as nearly exactly straight as it can be done. This is certainly one of the prime requisites of dressing warps for the loom, and while all kinds of contrivances, devices and methods have been adopted or tried, endeavoring to attain that degree of perfection made possible with the use of the dressing machine or tape slasher, it is highly improbable this will be accomplished with the slashed warp on the slasher of this day.

There are many schemes in use at the present time that are a wonderful help, and here and there throughout the mills you will still find the aggressive type of fellow who hasn't given up the hope that he will find some way out of the maze and finally emerge with something tangible and be able to produce work on a slasher that will compare with the dressing machine or tape slasher.

The accompanying photograph shows a neat little contrivance in use in quite a number of mills, and gives a clear idea of how mixed stripes can be held in place by using the same drop wires that are used on the automatic loom. The drop wires are put on a wire that stretches across the width of the slasher front and fastened or looped over a hook on one side, while on the other there is a thumb-screw at the end of the hook that the wire is placed on. This wire can be tightened or loosened as needed. This scheme is held in such high favor by some mill men that all mixed stripes must be run with drop-wires and the slasher man is allowed a slightly higher rate of pay. For fine mixed stripes the drop wires do a nice job, each thread is in its place and stays there. On some work, if it were not for their use, there would be a conglomeration of colors and white mixed in, making it hard for the web-drawer to get the ends straight, and harder for the weaver to produce a required percentage of cloth.

Supposing, for instance, there are places in the pattern that call for a repeat of fine mixed stripes such as 2 white, 2 blue, six times. It is impossible on the ordinary type of slasher comb to keep the stripe running this way, as there are not enough dents in the reed to allow the slasher man to arrange his work two in a dent, but by the use of the drop wires it is immaterial, after his counting is done in the reed he can then insert the drops in their proper places and be assured of their staying there and holding these fine stripes exactly where they should be.

By examination of the photograph, the advantages to be obtained can be readily seen and the possibilities or range acquired by using this method understood.

The illustration shows a Lowell wide-head machine, running 52-inch handkerchief goods with a 700 dent comb, and, if necessary, a number of hundreds of the drop-wires can be used to split up the work on patterns calling for fine stripes, and hold them straight onto the beam, which

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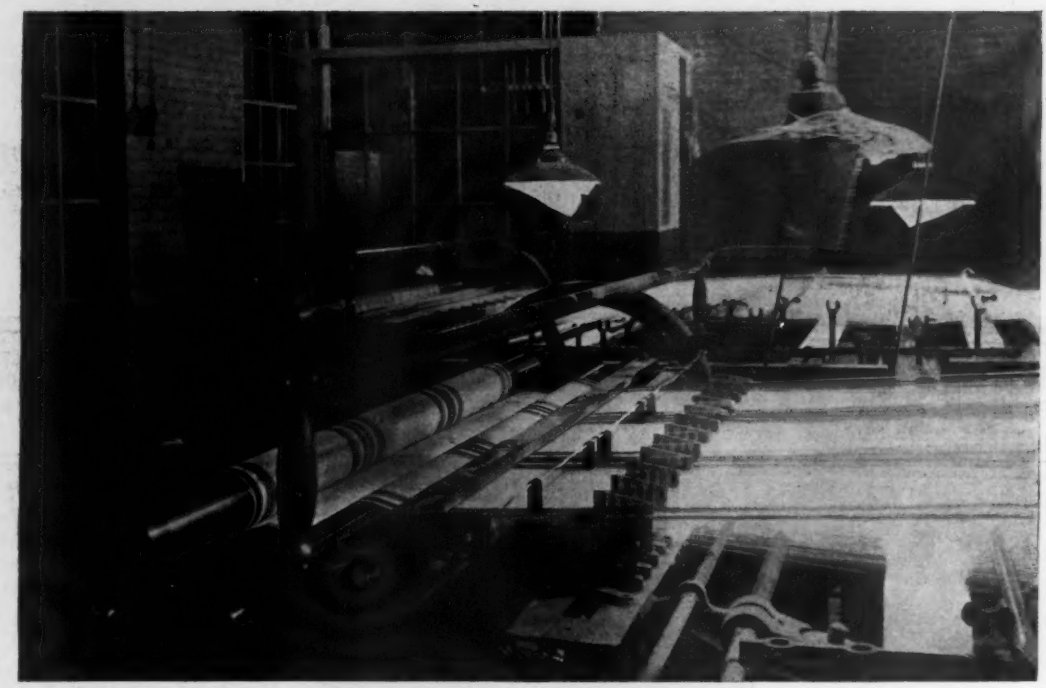


is entirely impossible with the coarse-dented reed used in many mills even today.

The art of dressing cotton yarn and laying it perfectly straight on the beam properly leased, seemingly was left behind when slashing came into vogue. The construction of dressing machines and tape slashers are such that it is well-nigh impossible to produce imperfect work. The mill is assured of a warp of yarn with each thread absolutely straight from the beginning to the end of the warp, with no crossing over.

For years after slashing yarn was adopted, there were contrivances of many kinds tried out on the slasher that would give the same quality of work as that attained on on the dressing machine or tape slasher, but to no avail. 'Tis true the Rhoades double comb when properly used gives wonderful results, and were used for years in some of the large eastern mills, but for some reason it has been overlooked by many of the mill men, possibly due to the fact that many look on slashing as a production job, and place no value on anything of this description, fully believing the weaver will "straighten it out".

The Morrill double comb is simply one adaptation of the English slant comb, and does good work for the plain mill, but is useless for fancies, *unless* the drop-wires are used with it, and while I have heard derogatory comment at times on both, due to the fact that they were spring expansion combs, I cannot find any fault with them whatever, and if used properly beautiful work will be produced, with crossed warps a thing of the past contented weavers a certainty, and with a greater production of better quality goods.

Summing it all up, if the man in charge wishes to do something to better conditions and doesn't care to spend any money on new reeds, he has this alternative of using the drop-wires in connection with the reed he is already using and be assured of far better results.

S. T. H. (MASS.)

Slackness in Ball Warps.

EDITOR COTTON:

I am having right much trouble in sizing my white ball warps, and would be glad to have some information on the subject. My colored warps come off all right. The trouble I have is in drying them. My warps are made on a balling machine, 12s yarn made from Middling cotton. They come from the size trough seemingly in good shape and remain that way until they get about five or six rounds on the dry cans, and then they begin to take on slack, and by the time they get off they are in such bad shape that it is almost impossible to beam them.

Will you please publish this question in "How Other Men Manage" and ask your readers to give their ideas on the subject.

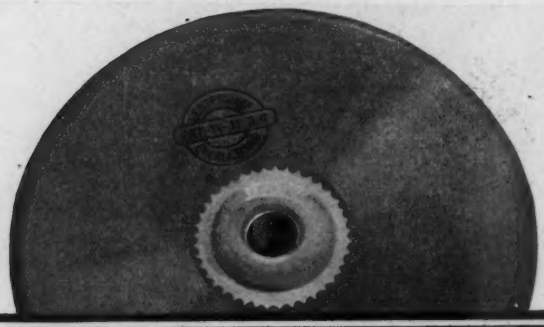
N. W. (N. C.)

The Continuous Card Stripper.

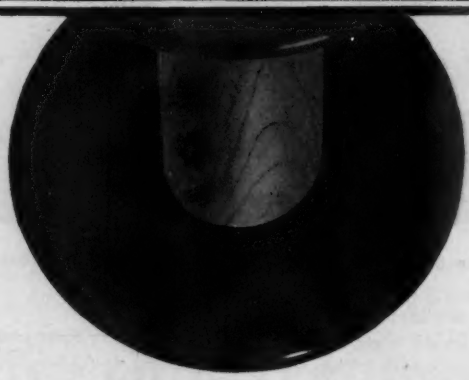
EDITOR COTTON:

On page 1088 in the September issue of COTTON there is an article on the continuous card stripper, and as I have seen one run and the work produced from it every day, I would like to give my opinion of it for, as the article says, it is an interesting device and well worth investigating.

The continuous card stripper, from my observation, does all that is claimed for it, and I must say the sliver looks extremely good indeed, and the quality matches the looks. There is all the difference in the world between a cylinder that is equipped with the stripper and one that is not, especially after a few hours run, for the one equipped with the stripper is clean looking and the cotton raised to the top of the wire, in comparison to the cylinder without the stripper, the latter cylinder is full of cotton or strips containing all the foreign matter that



They are imitated



—they must be good

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the strips retain. I might also say that the doffer keeps cleaner when the card is equipped with this stripper. Another thing I wish to add is, I do not think the tufts of needles will harm the card clothing for the needles are set no deeper than 1/16 of an inch at the most.

Maybe this letter will cause some of the readers of COTTON, who have their cards equipped with this device, to write and give their opinion. JOCK (MASS.)

Piecing Ends on the Spinning Frame.

EDITOR COTTON:

In reply to "J. H. (S. C.)" who asked in the January issue for information as to the best way to do end piecing on filling where bunch builders on frames and feelers on looms are used.

Over a long number of years, I have had end piecings done in every known way. At the present time we are using bunch builders on our spinning and feelers on our looms, and we do our end piecing in the usual way, that is, the doffers go along with the full quill and run a little yarn on the empty quill and put up the end. It is necessary to exercise much care and not let the yarn be run up on the quill higher than the bunch would come, and no ends should be lapped.

I think "J. H." will find it easier to do end piecing with bunch builders and feelers than where feelers are not used. One of the functions of the feeler is to keep out of the cloth the last loose end of the yarn as the quill of filling is exhausted.

To do end piecing with pieces brought back from the weave room is impracticable and is, as he says, expensive and will allow the end to be down longer and make more lap waste. Not only that, but it is a time-killer and will cause more fusses between the doffers and the section men than could be settled by the World Court. If "J. H.'s" overseer of weaving says he has to have perfect filling for feelers, he should go fix his feelers and not pass the buck. The place for perfect quills of filling is where feelers are not used.

As to the reduction in waste from the feelers, which "J. H." brings up in his letter, a bunch should have enough yarn in it to put at least three picks in the cloth. Four picks are better. That will allow the filling change motion two chances to operate before the filling runs out.

D. S. (S. C.)

EDITOR COTTON:

Responding to "J. H. (S. C.)" with reference to piecing up after doffing where bunch builders and feelers are used, it is necessary first to train the doffers not to tear down the ends while doffing. Next, have them piece up by first placing yarn from the piecing up bobbin through the traveler, then winding it on the empty bobbin on the spindle and allowing enough to run on to make a satisfactory bunch, which it will do. The doffer must either wait until the traverse is at the bottom or slip the bunch to the bottom of the traverse. This method has made very satisfactory filling.

B. P. (Ga.)

EDITOR COTTON:

"J. H." asks for opinions as to methods of piecing up after doffing, using bunch builders and feelers.

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The best way of course would be to use pieces, as he mentions, but mighty expensive. I am using bunch builders on our spinning, and we piece up in the usual way—having the doffer hold the thread down close at the bottom of the quill, and we have very good results. Of course in piecing up in this way care must be taken not to let the thread run up on the quill as it sometimes forms loops or tails, as we call them, and if the thread breaks in the shuttle it will make a thin place or a mispick in the cloth.

S. B. (Ga.)

EDITOR COTTON:

I note the question of "J. H. (S. C.)" in January COTTON as to the best way of piecing up ends after doffing.

The only way of insuring a perfect bunch on every filling bobbin, so that the feeler on an automatic loom may be set to produce the least possible waste, is to use bunch pieces in getting up ends that have been broken down in doffing. It is true that it requires a little more time for the doffer to get up by using pieces; also it makes slightly more clearer waste. However, these items are negligible when compared with the benefits secured in the weave room.

We handle this problem in our spinning room by having the pieces sorted out, according to yarn number, in small boxes next to the bin where we keep empty quills. The pieces are brought back from the weave room, which we have found more satisfactory than doffing the pieces in the spinning room. CONTRIBUTOR No. 461.

Overcoming a Picker Trouble.

EDITOR COTTON:

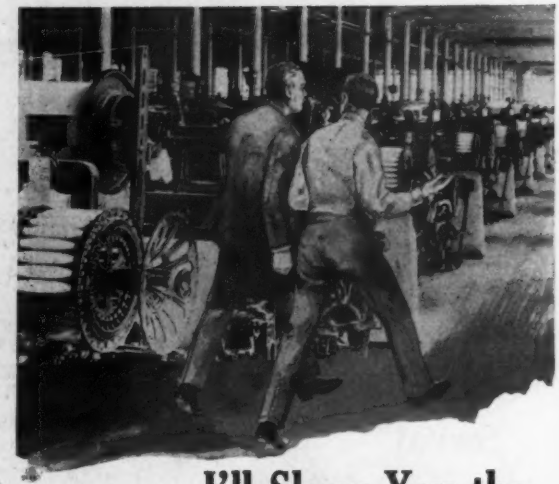
"M. S. (N. C.)" states: "We are having trouble with an Atherton finisher picker making a thin place in the center of the lap. Regulation of the draft doors on the sides of the machine and decreasing the fan speed have, to date, had no effect on the unevenness."

The foregoing may seem puzzling. In such a case, one must study the principle of the machine. The "air current" must carry only the cotton fibers and deposit them onto the cages, and at the same time the heavier impurities must be permitted to fall through the grid bars.

If then it is found that too much good fiber is deposited with the waste "droppings" under the beater, it may be attributed to either the beater revolving too quickly, the grids being set too far apart or the speed of the fan being so slow as to cause a weak current of air and thus failing to carry the fibers away before they were permitted to fall between the bars.

On the other hand, if the lap from the machine contains too much seed, leaf, etc., the causes may be directly the reverse of the foregoing. Namely, the beater may be revolving too slowly, failing to thoroughly open the cotton, or the bars may be too close together, preventing the impurities from passing between them or the fan may be running at too high a speed and creating an air current sufficient to carry the heavier impurities with the cotton in place of allowing them to fall out while passing over the bars.

In connection with this principle of picking, I may



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mention that sometimes the dampers which regulate the air coming through each screen are either entirely or partially closed at times to obtain good results. Therefore, when this is the case the cleaning power of the particular screen is reduced and as the dirt cannot pass freely, it either collects on the inside of the screen or goes along with the cotton causing dirty or uneven work. It will be seen then that if the beater speed, dampers and grids are satisfactorily arranged the speed of the fan would have to be regulated to remedy either of the evils referred to. Therefore, in determining the speed of the fan the results along the lines just mentioned must be taken into consideration and the volume of air must be produced accordingly.

Having obtained the desired amount of air current it is next advisable to attend to the proper distribution of it in order to lay the cotton evenly on the cages, thereby preventing one portion of the sheet being thicker than another. To facilitate this, pickers are provided with an arrangement of dampers situated at some point between the end of the screen and the discharging point beneath the machine. Usually there are flues which extend along the sides of the screens. There are several styles of damper in use, but all are arranged to obtain the same object, namely, to provide a means whereby the air current can be wholly or partially shut off from either the top or bottom screen.

For instance, if the cotton was being delivered from the machine in a sheet with one side heavier than the other, it will be concluded that the air current on the heavy side is stronger than on the side where the sheet is lighter. Therefore, to remedy this, the dampers referred to must be adjusted to divide the current in such a manner as to lay the stock evenly on the surface of the screen.

In addition to regulating the cotton on the surface of one screen, provision is made for properly dividing the current between the two screens. In connection with this comes the prevalent evil of lap sticking, that is, after the lap has been taken from the machine and is being fed into the next process, the sheet will split or divide and permit one portion to run extremely heavy or light at intervals. Again, a sheet may have ragged, uneven edges or thin edges, also thin and uneven places in the center of the sheet, while other parts may be fairly uniform.

The area of the dust flues should always be a little in excess of the combined areas of the fan outlets. Thus, if the latter have an area of 300 square inches an area of 340 square inches is about the right one for the dust flues.

A common method is to allow the dust flue to have an exit of three square feet per fan. The problem of the regulation of the current of air in a picker room is a most important one, and its proper solution depends upon such a number of points that constant watchfulness is wanted both in laying down and working the machines.

The foregoing is a theoretical outline of the principle of a cotton picker. Now for the practical side. "M. S." should go at the trouble as follows:

(1) Be sure that the damper under the beater is closed tightly. If the regulation of the draft doors and fan speed has no effect, it goes to show that the beater is throwing a current stronger than the fan suction.

A carding beater revolving about 672 r.p.m. and a fan speed of 946 r.p.m. is o.k. and should give the best results. However, the foregoing speeds, though most common, may in some cases work against one another. So if the damper under the beater is found closed tightly then,

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(2nd), the speed of the beater should be considered.

Reduce the beater down to about 500 r.p.m. If this makes no difference, then (3) measure the outlets and follow my instructions concerning the common method outlined.

In conclusion, I want to point out to "M. S." that if closing the doors and changing the speed of the fan has no effect, then it should be clear to him that there are two courses, namely, either the beater is creating a strong current due to a defective under damper, or the beater is revolving too quickly and creating an air current stronger than that of the fan.

If these suggestions fail I should be glad to have "M. S." write again, as I am ever ready to help any reader of COTTON.

WASH (R. I.)

Duties of Assistant Superintendents.

EDITOR COTTON:

I would like to see the following question discussed freely by all readers of your "How Other Men Manage" department:

What are the duties of an assistant superintendent? What are the qualifications necessary for the position? I appreciate that local conditions would govern the answers to this question, but I would be glad to have your readers discuss it according to their own experiences.

J. R. W. (N. Y.)

Killing Static With Steam.

EDITOR COTTON:

Experts on static electricity claim that it is caused by friction of machine belts and material in process. Like most mill men I know the many advantages of humidification. However, I discovered a scheme that I hope will benefit a great many readers of COTTON. Every winter, since coming to Rhode Island, I have been troubled with static electricity. Many mornings we could not get going properly for two and three hours. The scheme was worked out as follows:

We use Turbo humidifier heads, and have devised an arrangement whereby we have valves that will close the water and air pipes; then we have a valve attached to the air pipe direct from the steam line. When it is very cold and the mill is filled with static, we turn on the steam, and when things are running well, we shut off the steam and turn on the air and water. In other words, we run steam through the humidifier heads, and this gives us the vapor as well as the heat.

I think this is a new idea for killing static—at the same time enjoying the benefits of humidification when the static disappears.

M. R. (R. I.)

The Textile Recorder Year Book for 1927 has been issued. This is an English reference book compiled annually by the *Textile Recorder* of Manchester. It is an extraordinarily complete volume, containing general statistical information relative to the various textile industries, and of especial interest is the comprehensive technical material relating to English practices and methods. John Heywood, Ltd., Deansgate, Manchester, England, are the publishers. Copies may be secured through COTTON, or direct from the publishers. The postpaid price is eight shillings three pence.

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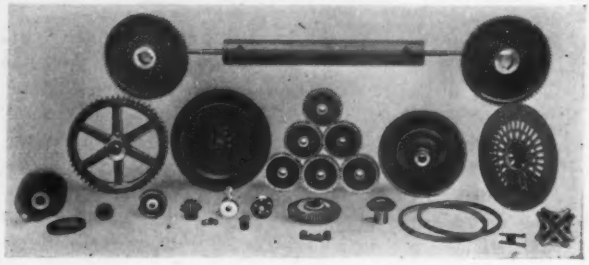

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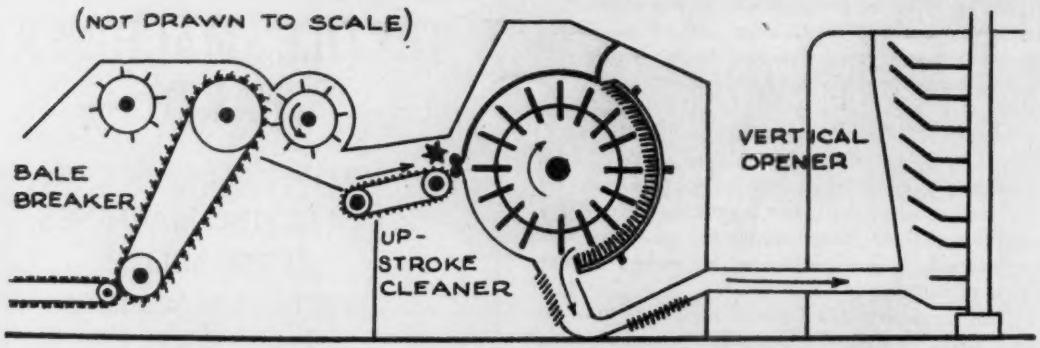

Using the Up-Stroke Cleaner With the Vertical Opener for Low Grade Cotton.

EDITOR COTTON:

Since there is at present a considerable interest in the up-stroke cleaner, I thought a discussion of it might be of value.

The up-stroke cleaner is used preceding the vertical opener for removing the heavy foreign matter from the cotton and to put the cotton in such condition that the vertical opener and the pickers can do their best work. By adding the up-stroke cleaner to the cleaning equipment, it is often possible to use one grade lower cotton and still turn out the same quality goods. The accompanying sketch shows a typical lay-out of the machinery for this cleaning process, and is the identical arrangement we have at our mill.

The bale breaker and vertical opener are standard equipment in most mills today, and will need no explanation to a mill man. The up-stroke cleaner is not so familiar as it is a comparatively new machine. It is simply a Buckley or porcupine beater which turns in the opposite direction to that of the beaters in most cleaning machines. The beater is surrounded on the opposite side from the feed rolls by grid bars, usually about sixty bars, through which the foreign matter is thrown. The beater is 41 inches in diameter and is much heavier in construction than the beaters found in breaker pickers. The cotton is sucked out of the up-stroke cleaner through an opening at the bottom, by the fan in the vertical opener. There are grid bars at each bend in this passageway which collect some droppings. The speed of the fan will have to be regulated according to the local conditions. It will depend upon the amount of stock being put through the machine and the size of the fan being used.

The following settings and speeds were established, after much experimenting by the writer, as the ones which give the best cleaning for Strict Low Middling cotton, 7/8-inch staple:

Production of machine, 500 pounds per hour.
Diameter of feed rolls, 2¾ inches.
Speed of feed rolls, 47 r.p.m.
Distance of beater from feed roll, 3/8-inch.
Distance of grid bars from beater, 5/8-inch.
Speed of 41-inch Buckler beater, 410 r.p.m.
Speed of vertical opener fan, 1,250 r.p.m.

The spacing of the grid bars surrounding the beater is as follows:

First 20 bars from bottom spaced with 3/16-inch wood blocks.
Next 15 bars spaced with ¼-inch wood blocks.
Next 10 bars spaced with 3/8-inch wood blocks.
Next 9 bars spaced with 7/16-inch wood blocks.
Next 6 bars spaced with ½-inch wood blocks.

The droppings obtained from these settings on 7/8-inch Strict Low Middling cotton were composed of seed and boll particles, sticks, leaf particles, sand, and some short neppy cotton fibers. The cotton leaving the up-stroke cleaner was well opened, fluffy, and in excellent condition for the vertical opener and pickers to work on. High density compressed cotton was used, being fed directly from the bale.

The foreign matter removed by the up-stroke cleaner with these settings, on different grades of cotton, are as follows, the figures representing the average of a series of tests on each grade: Strict Low Middling, 1.83 per cent; Middling, 1.56 per cent; and Strict Middling, 1.04 per cent.

I would be pleased to see further discussion on this machine and would be glad to answer any questions relating to our experience with it.

CONTRIBUTOR No. 1029.

Preventing Roving Lapping on the Middle Steel Roll.

EDITOR COTTON:

This is in answer to the inquiry of "Contributor No. 1024" in regard to roving lapping around the middle steel roll on the spinning frame. I note he says he is troubled more in the Fall of the year than he is during the Spring and Summer.

It is always just a guess when one attempts to diagnose a case that he has never seen; however, I will mention some of the causes that we have had, and it may be that some of them will fit his case.

The most common cause we find is too much humidity in the room, and since his trouble is worse in the Fall, perhaps that is his difficulty also. We have noticed that where some of our humidifier heads are wetting down too much that we have trouble in that neighborhood with the middle roll lapping up.

Of course, if the oilers are careless and get oil on the steel rolls, this will cause the trouble too. Sometimes the spinners will moisten their fingers in twisting-in the roving and this is another cause. If the rolls are dirty and need scouring, more of this trouble will be encountered. I would suggest that "Contributor No. 1024" have his rolls all scoured and polished with pumice stone, the latter will probably be necessary if there have been many

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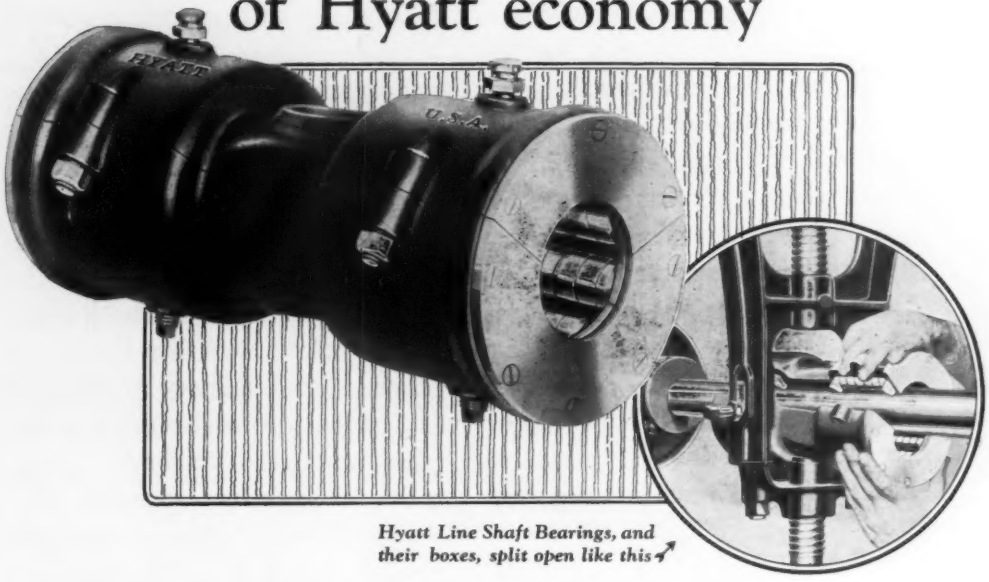

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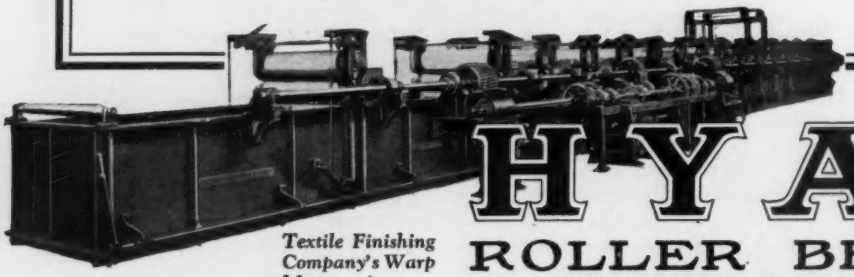

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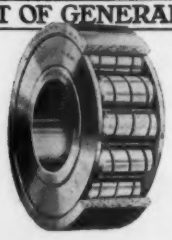

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laps cut off the rolls, as there will likely be found burrs on them from this removing of the laps. After the rolls are all cleaned and polished well, then see that the oilers are careful, and that there is not more than 56 per cent relative humidity, and that none of the heads are wetting down. Then see that there is no belt dressing getting on the rolls. If there are any counter belts overhead there is likely to be trouble from this source.

D. B. (TEXAS.)

EDITOR COTTON:

Replying to "Contributor No. 1024" with reference to roving lapping up around the middle steel roll on the spinning frame, this question appearing in the January issue of COTTON, in which a description of this man's conditions was given.

This difficulty is usually caused by having the front and middle steel rolls spread too far apart. These two rolls should be as close together as possible, and then if any rolls have to be opened, the top front roll should be opened until the yarn does not cockle.

If this man already has the steel rolls closed, I would suggest that he take out the steel rolls and clean them. This may be done by first wiping the steel roll with a piece of waste soaked in gasoline, then dusting with Spanish whiting until all the flutes are full. Then scrub the whiting out with a stiff bristled brush, or one made from old card clothing. Then give the rolls a light dusting and rubbing with a piece of waste sprinkled with Spanish whiting.

If these two suggestions do not remedy the difficulty, I suggest adding one or two teeth of twist in the speeder roving, but I really think he has the middle and front steel rolls spread too far apart, and these should never be opened.

P. T. (GA.)

EDITOR COTTON:

I note that one of your contributors is having difficulty with the roving lapping around the middle steel roll on the spinning frame. The best I can do in answer to this is to give my ideas regarding his lay-out as published in his letter which appeared in the January issue of COTTON.

Te begin with, I think he is drafting too much on the slubber as he should not draft over 3.50 to 3.60 here, and 5.00 on the intermediates and 5.50 on the speeders. His spinning draft is not excessive.

If he has his roll settings in his card room right, I would advise that he investigate his humidity first and see that he is getting the proper per cent. If he is sure he has a relative humidity between 60 and 68 per cent, then he should look to the settings on the spinning rolls. He may have the steel rolls spaced properly and yet have the top rolls set too close or too far apart.

He evidently is breaking his stock between the front and middle roll. This would cause the roving to curl and follow the travel of the middle roll. This is especially true in the Fall of the year with new cotton, before it has had time to age after picking, as there seems to be a gum or something in it that causes it to follow the rolls.

I have had trouble of this kind from time to time, but have always found that most of it was caused by improper setting of the rolls, and I think your inquirer will find this to be the seat of his trouble, or at least worth investigation.

B. V. (N. C.)

EDITOR COTTON:

The following may help "Contributor No. 1024" in the trouble he is having with roving wrapping around the middle steel roll on the spinning frame. This question appeared on page 241 on the January number of COTTON, and in it he gave his complete layout and organization, to which I refer the reader in connection with the following answer.

I have had charge of the spinning for many years and have used all kinds of cotton and lengths of staple up to 1 5/8-inch. To my mind the drafts, weights and speeds given by this contributor in his question are good, and should tend to produce good running work. Whenever I have roving wraps on the middle steel rolls I find it is usually caused by the rolls being spread a little too much for the length of the staple being run. By setting the rolls a little closer it usually stops this wrapping up.

It may be that the cotton he is using is not quite as long as he thinks it is. It may be that he cannot set his rolls close enough for the length of his staple. I would suggest that he try to set his rolls closer to see if it will help stop his trouble.

In setting rolls it is best to experiment on one frame until the best settings are obtained. I always set the rolls as close as I can and still make good work.

Mixed staple is another cause of roving wrapping around the middle steel roll, since the rolls can be set for only one length of staple.

In making close settings it is well to take the breaking strength of the yarn at different settings. A wide setting will give a low break and the yarn will not be even. Too close a setting will weaken the yarn and is liable to cause cockled yarn.

N. B. M. (MASS.)

EDITOR COTTON:

Answering "Contributor No. 1024" in the January number of COTTON regarding roving laps on middle steel rolls of his spinning frames, I will say that the most of the data he gives is immaterial. I wish he had stated the diameters of his steel rolls and the settings of them.

His trouble comes from a too wide setting between the front and middle steel rolls, for the length of staple he is using. If there is considerable difference in diameter between his front and middle steel rolls he will be troubled with laps on the middle roll, owing to not being able to set the front and middle rolls closely enough together. The fibers of cotton being too short for the setting, break down, and lap up on the middle roll.

As to having more trouble in the fall than in the spring or summer, I should say this may be due to a lesser degree of humidity in the fall with a consequent outstanding of fibers from the roving sliver, causing these fibers to catch on the middle roll and lap up. His middle steel rolls are probably badly nicked by frequent cutting of laps from them, and unless these nicks are removed and the rolls made smooth, he will have plenty of laps, even if all other things are made as they should be.

I once took charge of a spinning department in a mill

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having a goodly number of frames equipped with a 1 1/8-inch in diameter front and back roll, and a 7/8-inch diameter middle roll. These frames were bought by some wise (?) fellow for the spinning of long staple cotton. That's all they were good for. There came a time when the frames were desired for using much shorter stapled cotton, and then there was trouble, plenty of it. The rolls could not be set anywhere near closely enough together and one section hand was kept on the jump doing nothing else but cutting laps from the middle steel rolls. The man who bought these frames, thusly equipped, might have bought frames on which the rolls could have been set for one-inch staple as well as 1 3/4-inch, but I suppose he didn't know enough to do this. Anyway, he caused lots of grief. I tried to get the superintendent to replace these small, middle steel rolls with larger ones but 'twas no use. He thought the cost was too high. I tried to get the boss carder to make a harder twisted roving, figuring there would be less chance of loose fibers catching on the steel roll and lapping up, but it was no use; the carder thought he would lose production. I had all the nicks removed from the steel rolls, and the rolls scoured and smoothed with pumice stone, and during my stay at the mill I worried along as best I could.

At another mill where I once worked, the steel rolls of the spinning frames were always run fully closed, and no trouble was ever experienced from laps on the middle steel rolls. But Sully cornered the cotton market, and the mill bought shorter staple, inferior cotton, in place of the kind which had always been used, thinking that by so doing as much profit as ever would be made. Talk about a hell on earth! The spinners were "bunged up" and "busted" from morning 'till night. Section hands were continually cutting laps from the middle steel rolls, and they used cartloads of new top rolls weekly to replace the spoiled ones. The bands, which were made of roving from the inferior cotton, would not last on the spindles scarcely any time at all, and at times fully one fourth of the spindles in the room would be stopped for lack of them. These troubles disappeared immediately when we got back to using our old, original cotton. Perhaps I have said enough to show "Contributor No. 1024" where his trouble lies and the remedy for it. It may be that he is so situated that he can apply the remedy. I hope so anyway; because if his troubles are anything like mine were, I know how to pity him.

REFEREE (CAL.)

EDITOR COTTON:

In the January issue of COTTON I note that "Contributor No. 1024" states he is having trouble with the roving lapping around the middle steel roll in his spinning and would like opinions of the readers as to the probable cause of this difficulty.

In answering this question I would say that his trouble may be in his settings, and would advise him to try closing up his rolls a little. I experienced trouble of the same nature on the drawing frame, and I found it to be in the settings.

Again, this may be an excessive break draft, causing the ends of fibers, I should say, to break and lap around the steel roll. If "Contributor No. 1024" will read the articles under the heading "Limitations of Break Draft" in the January issue of COTTON, he may find some informa-

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tion to help him out of his trouble.

As to the steel roll lapping more in the fall of the year than in the spring and summer, I would put it down as climatic conditions, which troubles everyone more or less.

W. O. R. (CONN.)

The Cost of Roll Covering.

EDITOR COTTON:

According to my experience in our roller shop here at the mill, our cost of covering 1,000 rolls—4-inch cot or double boss, 2-inch on each side—is $59.00. The cost on this in an outside shop is $85.00.

This is in answer to "H. C. (S. C.)", and in regard to the details, which he asks for, I give you below the time required for each operation: 1½ hours to clean and cement the cloth on 100 solid rolls; 1½ hours to draw on the cots and finish the ends in the lathe, 100 rolls; 1 hour to cut the strips and block 1,000 cloths; 1½ hours to scarf and cement 100 4-inch cots. We get 247 cloths to one yard of Dewey's tweed cloth; and 10 4-inch cots to one square foot of skin.

I did have the cost down below $50.00 per 1,000 rolls, but it seems to be up a little now. We use the best material and labor, and count in everything, including the glue.

P. D. (GA.)

Battery Bobbins Rolling.

EDITOR COTTON:

I want to thank you and the several contributors to COTTON for the several answers to my question on batteries on looms rolling the bobbins. These answers have been published in COTTON since the appearance of the question in the January issue. They have all been a great help to me, to say the least.

It seems as though they practically all doubt that my trouble was bobbins rolling. I would have doubted it myself had I not seen it with my own eyes, and it was not one or two looms, but practically half of them. I have stood by a loom and marked each bobbin with crayon and taken each one out as soon as the filling broke and allowed a fresh bobbin to come down in its place, and have counted as high as two bobbins per minute for a period of ten minutes turning and breaking the filling. I am glad to say we have been able to overcome most of this, or getting down to cases, we haven't failed on a single one so far since reading the dope in answer to the question.

We found that the biggest part of our trouble was caused from bobbin supports and support studs being worn and vibrating just slightly. To remedy this we put in new studs and tightened down securely with set-screws applied for this purpose. In most cases this did the trick, but if it didn't, it put it in low gear so to speak.

Our next move, then, was putting on new bobbin guides, but in some cases we had to put in new discs and disc studs, but not in a single case have we failed yet (I'm knocking on wood). The trouble was lost motion pure and simple, but we found it was not the lost motion that could be detected with the eye, but the little minute vibrations, that caused the trouble.

I am sure that "P. T. S. (Maine)", whose answer appeared in the February issue, has had my same trouble,

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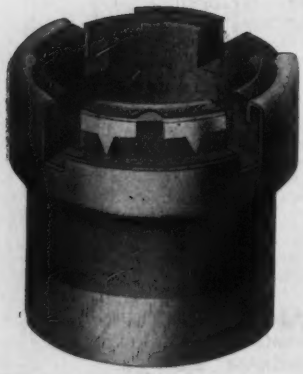

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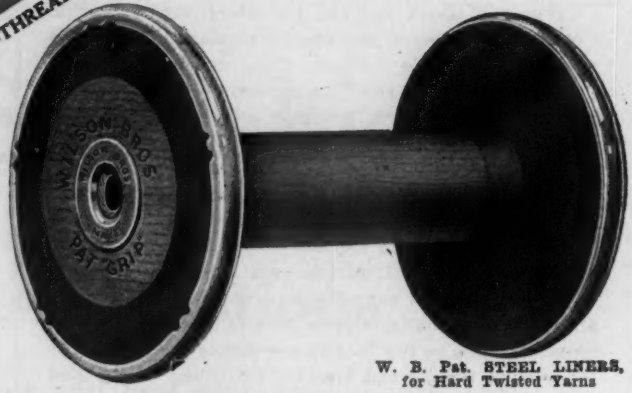

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because he goes straight at a solution without telling me my bobbins are not rolling. We are using Draper No. 3 batteries and also the Draper bobbin support with Stimpson feed pawl, and "P. T. S." gave a point that is a new and a good one to me—namely, setting the battery disc so the barrel of the bobbin fits flatly on the barrel end against the disc.

I would be glad to have other readers offer suggestions. All the evidence may not be in yet. Maybe I have overlooked something. Anytime I can be of service to COTTON and its readers, I shall be glad to do so.

T. R. (S.C.)

Ruminations on the Belting Question.

EDITOR COTTON:

In your November issue, under "Scientific Trends with a Textile Slant", we find this truth, "No one has ever been able to thwart the natural trend of a situation over a very long period of time—the attempt, even, is disastrous to oneself. Far safer, is it, to observe the nature of a trend and align plans to it."

Coincident with this I have been delving into operating economics. It is funny how these spells of economy hit a fellow and while one may run along for a time complacently, the time surely comes when "self stock taking" will sow seed of doubt as to whether or not one measures up to a high standard of efficiency commensurate with the trust and confidence placed in us by our superiors or stockholders.

In digging into this thing of Operating Economics I happened to come across some comparative data on power transmission taken from certain tests of belting made by the National Laboratories at Paris, France, and if, after stripping this report of all technicalities, the truth remains, then I have been simply fooling myself, accepting from my purchasing department a commodity approved for its cheapness rather than its economic value.

During the tests referred to a lot of data was compiled, but for my purpose I will only deal with or follow through the action of two three inch single leather belts. One of so called special tannage or treatment and the other of ordinary oak tanned leather which is commonly used. Each of these were operated under various tensions on cast iron pulleys of equal diameter and the belt speed was maintained at around 5000 feet per minute.

Let's look at the following extracts from the tables and see if we can get anything out of them.

3-inch Single, Special Tannage.

Pull of belt on shafts	lbs.	550	440	242
Tension tight side	lbs.	415	361	260
Tension slack side	lbs.	220	165	64
Slip	precent	.96	1.04	1.28
Total power loss	percent	1.80	1.86	2.04
Slip feet per minute	—	47	50	60

3-inch Single, Oak Tannage.

Pull of belt on shafts	lbs.	550	440	242
Tension tight side	lbs.	418	363	264
Tension slack side	lbs.	224	167	68
Slip	precent	1.02	1.12	8.00
Total power loss	percent	1.82	1.92	8.80
Slip feet per minute	—	49	53	382

Run down the column of figures at the left and we see a total pull on the shaft with a 3-inch single belt of 550 pounds and around 415 pounds of pull or tension in the tight or pulling strand of the belt and as we follow the figures down we get a total power loss of only 1.80 per cent for the special tannage and 1.82 per cent for the oak tannage, both being about equal in efficiency of slightly better than 98 per cent. Taken at first glance the oak belt made as good showing as the other but on closer study the comparison is worthless because we know by experience neither of these belts would live under this extreme tension or load which in this case shows about 138 pounds of pull or tension per inch of single leather in the tight or pulling strand. Seventy pounds per inch of width would be nearer a conservative tension for a reasonable length of life or usefulness.

Let's take the column of figures on the right and in following these down we get a very different story. We have here a total pull on the shafting of 242 pounds and 260 pounds in the tight or pulling strand of the belt under operation. The special tannage shows only a total power loss of 2.04 per cent while the oak belt under this lessened tension gives us a total power loss of 8.8 per cent or in other words the special tannage has the advantage as a power transmitter of 6.76 per cent. Get the fact, six and three-quarters per cent saving in power transmission efficiency alone to say nothing of labor costs and plant production.

If we could all deduct 6¾ per cent from our annual power bills it would make a neat sum to set over to reserve and the production sheets would tell a different daily story if this slip could be corrected.

Getting to this matter of belt slip it is well to note the last figures in these columns. Someone has taken these tables and computed the belt slip in feet per minute under each test or tension and you will note the range is from 47 to 382 feet of slip per minute, meaning simply this that for every 5000 feet of belt passing over the pulley or in operation, no matter about the width, whether it be one inch or twelve inches wide, there is from 47 to 382 feet, according to the tension, of unproductive investment in one class of belting or another. Go on with the thought further and try to visualize what a slippage of even 250 feet per minute means in the run of day for a realy large industrial plant.

These thoughts are not for the purpose of commending nor condemning one class of leather or the other but if this article draws out a discussion through these columns some real facts, based on actual operating conditions, tending to verify the indications of this laboratory test, it might be of immense value to someone. Someone trying to do the things he is trusted with better than he is today.

Allow me to again quote you, "No one has ever been able to thwart the natural trend of a situation—Far safer, is it, to observe the nature of a trend and align plans to it."

J. O. S. (GA.)

The action brought by P. A. E. Armstrong against the Ludlum Steel Co., Watervliet, N. Y., for amounts claimed due for a percentage of profits and royalties on patents assigned by him to the company, has been dismissed by a referee's finding that the company has paid Mr. Armstrong all monies due him.

Drafting for Better Yarn.

EDITOR COTTON:

I note the request of "Contributor No. 6203" on page 51 of the November issue for recommendations as to draft in a mill using 7/8-inch staple and making 14s yarn. He gives some data regarding his hang-up, but it is not complete enough to permit a thorough reply. However, I will suggest several changes which might result in a more even yarn, and I refer the reader to his letter in the November issue.

He states that he is using two parts of good grade cotton and one part poorer grade cotton. Are these cottons thoroughly and evenly mixed? Unless they are, uneven work is bound to follow. Has he enough equipment to run the poorer grade cotton through a more thorough cleaning process than the good grade cotton and then mix them? I would say that 1,485 r.p.m., the speed he gives in his letter is much too fast for a three-blade beater unless the cotton is extremely dirty. I think 1,150 r.p.m. would be better. I would say that the card and drafting hang-up he gives is all right.

His roving processes, as he outlines, are:

Slubber, making .68 hank from 48.5 grain sliver,	draft, 3.96
Intermediate, making 1.00-hank from .68-hank roving double	draft, 2.94
Roving, making 2.00-hank from .68-hank roving, double	draft, 5.90
Roving, making 2.60-hank from 1.00-hank roving, double	draft, 5.20
Spinning, making 14s from 2.00-hank single,	draft, 7.00
Spinning, making 20s from 2.60-hank single,	draft, 7.70

My suggestion would be to shorten the drafts on the slubber and roving frames, and increase the intermediate, as follows:

Slubber, make .60-hank from 4.85-grain sliver	draft, 3.50
Intermediate, make 1.10-hank from .60-hank roving, double	draft, 3.67
Roving make 1.90-hank from .60-hank roving double,	draft, 6.34
Roving, make 2.50-hank from 1.10-hank roving double	draft, 4.55
Spinning, make 14s from 1.90-hank roving single	draft, 8.00
Spinning, make 20s from 2.50-hank roving single,	draft, 7.36

He did not mention spindle speeds and twists, but these should certainly be considered in running down unevenness Are the roving frames running over catalog speed, If so, the suggested layout would permit of reducing the excess.

Changing from solid to shell front rolls would no doubt help this work, but it would be quite an expense. Why not try the changes in the system and organization first and resort to the expense account at the last.

M. C. (N. C.)

Keeping Laps Even.

EDITOR COTTON:

Every reader of COTTON having charge of pickers, should read, and re-read the article entitled "Keeping Laps Even," by "J. F. L." appearing in the October number of the magazine.

This writer states in the second paragraph of his article: "An evener is a pair of scales in a way, so to speak, and its pivots and working parts should be just as flexible as the pivots and working parts of the lap scales on which the laps are weighed if it is possible to get them to work that freely." In this article "J. F. L." has proven himself to be one of the ablest of writers on the subject of pickers.

Take his article apart and examine it, and it will be found that the following crept into his mind because of the fact that he is an expert on pickers: He had in mind that the heavy portion of laps fed in called for quick action in the reduction of the feed roll speed, and in case of the light portions of laps, vice-versa. It is exactly like putting on or taking off weight on a scale.

In this article "J. F. L." has rendered service to many students, as it will prove beneficial to them later. It is such writers as "J. F. L." that makes one await with interest every issue of COTTON.

Every textile school student should prize the October issue of COTTON and read this article, for I can assure them that when they get the practical points which the writer conveys, they will not only get the principle of the cotton picker, but the secret of the making of as even lap as possible with the present picking system. "J. F. L." is a thinker.

WASH (R. I.)

Sizing Warps Without Starch.

EDITOR, COTTON:

This is in reply to "Contributor No. 1038", who stated in the February issue of COTTON that he has a construction, 44x40, 30s warp, on which the customer does not wish any starch to be put in the sizing operation. He stated he has tried fish glue without success, and wants suggestions as to how the warp can be sized starch-free.

Sizing without starch is at best a difficult proposition. I feel, moreover, that for whatever reason starch is objectionable, any glue will probably be a great deal more objectionable, and not knowing exactly what the objection is in this case, it is practically impossible to advise.

The writer advises as the construction of the cloth indicates, that it is a gauze, in which case the objection to starch may be that it is not readily de-sized. As a matter of fact, it takes practice and care to de-size perfectly with malt diastase. In order to obtain a thorough de-sizing, the cloth should steep over night at a temperature between 40 and 50 degrees Centigrade. This transforms starch through hydrolosis into soluble products such as dextrine, glucose, alcohol, etc., which are readily rinsed out. This transformation is an exothermic reaction, that is, it produces heat. Diastase has been advocated as an agent for transforming thick boiling starch into thin boiling starch for sizing in preference to mineral acids. However, as it produces sugar, alcohol, and, through oxydation, oxalic acid and other by-products of no sizing value and very objectionable besides, causes it to be a wasteful material for sizing purposes. Also, it destroys amylopectose, the most valuable constituent of starch for good sizing. For de-sizing, however, it is very valuable.

The action of diastase is more perfect in a slightly acid solution. A small amount of acid should be used to neutralize any alkaline reaction. A combination of acid and diastase gives best results for de-sizing. The subsequent scouring of the cloth is more readily achieved and the action of the alkali is more uniform if the cloth is slightly acid, which, in addition, is useful to eliminate rust spots. However as the contributor says he cannot de-size, all this is beside the issue.

Among the gums which will partly substitute starch for sizing, may be mentioned, first, the soluble starch gums

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such as dextrines, also gum arabic, tragacanth, Irish moss, animal glues, gelatine, all of them are more expensive than starch. Some of them are more soluble than starch, others less so.

Dextrine and gum arabic are readily soluble in water but lack in viscosity and hence in sizing value. Gum arabic may be thickened by the addition of an alkaline salt such as borax. As a rule, however, although natural gums, while they offer qualities of considerable value for sizing, as your contributor writes about glue, are very unsatisfactory as they give neither the body nor the proper weaving qualities to the warp. They should be mainly used to add to starches those qualities of which starch is deficient.

The natural gums, moreover, offer the very serious objection of being readily subject to deterioration. For this and from the standpoint of economy, gums derived from starch are far superior.

It is a question, however, whether your contributor's customer will class gums derived from starch and starch in the same objectionable group. If so, it will be hard to indicate to him a satisfactory substitute. The most likely to give him fair satisfaction will be gelatine, glue, karaya, or gum arabic. The last two will give better results with the addition of a very small amount of borax. All in all, it appears to me that if at all possible, he should try to overcome his customer's objection to the use of starch and starch gums, by giving him a proper process to obtain a thorough de-sizing, which is evidently essential if the material is a gauze.

CONTRIBUTOR No. 1486.

EDITOR COTTON:

I believe that if "Contributor No. 1038" will use a mixture of five per cent sulphonated castor oil, running the bath in the size box at about 180 degrees F., that this would prove satisfactory on the 44 × 40 construction he is making, and that such a sizing would serve his purpose and eliminate the process of de-sizing. His question in the February issue of COTTON stated that his customer uses a boil bleach instead of de-sizing, and I believe this suggestion will fit in with this requirement.

CONTRIBUTOR No. 1487.

EDITOR COTTON:

In reply to "Contributor No. 1038," my experience in sizing cotton warps with glue has been rather meager, but judging from results obtained in running work of this nature, I have an idea that if your inquirer tries the following mix his warps will run better than previously:

100 gallons of water, 70 pounds of *hide* glue, 2 pounds edible tallow (preferably mutton tallow).

Hide glue will give the size more body than the fish glue. If warps sized with the foregoing mix are harsh and stiff, a more supple warp may be obtained by adding one-half pint of turpentine to each 100 gallons of size.

CONTRIBUTOR. No. 1488.

EDITOR COTTON:

In answer to your contributor who asked a question regarding sizing cotton warps without the use of starch.

It is none of my business, I suppose, but just why this man's customer cannot get a finisher who can de-size and get the starch out of a 44x40 cloth made of 30s yarn is beyond me. (This was explained later by the inquirer who stated that the material is made for gauze and is given a boil bleach and not de-sized.)

However, this situation bobs up every once in a while. The last time I ran into it was in 1915. Our goods were of much higher sley than in this case, and our yarn was 26s soft spun. Our samples were woven in "bang-up" good shape, and sent to the finisher, and then came the roar—"can't get the starch out." So our formula simply had to be changed.

In our case, we had a heavy weave to contend with, and in looking over old records of sizing formulas, I find we used: 100 gallons of water, 64 pounds of Danamar gum; eight pounds of Tragasol; six pounds of soluble softener; and one bar of hard yellow soap. Boil one hour?

This was a big order, in a large New England mill, and was handled successfully.

Sizing conditions vary so that one cannot visualize just what a mill is up against, but must be on the job and oversee the little details that are many times overlooked, and while formulas can be written out, one cannot rely entirely upon the written word, but must use judgment to fit his own situation.

I have seen fish glue tried out in years gone by, but have never known it to be a howling success. I was always very much dissatisfied with my own attempts with it.

Dextrin, or British gum, is a wonder for almost any kind of a combination. Here is a formula I used years ago: water, 50 gallons; dextrin, 45 pounds; softener, 7 pounds. Boil one hour?

This is apt to be quite wiry, and can be reduced or softened to suit by the addition of more softener put into the size box or machine.

There are very much stronger size combinations made for woolens, etc., with the idea of washing completely out of the cloth in finishing. These can be reduced to fit occasions, and are composed of dextrin, glue, glycerin, and gelatin.

There are many other formulas that can be relied on to help this man, and the fact that his goods are of such a light sley should make it less difficult for him. In case he should use the formulas I have suggested, he must remember they are the starting point, and that he must work up or down to suit his conditions.

We often read a formula for size, and it says "Boil one hour", or "one-half hour." But suppose you went into a mill using the vacuum system where you were accustomed to from 80 to 110 pounds of steam, they have less than 15 pounds to do the work all through the mill. The steam conditions would not fit your formula at all. It would take at least 2½ hours to make a batch of size you formerly made in one-half hour. For that reason I have placed a question mark after the boiling time in the foregoing formulas.

E. J. (MASS.)

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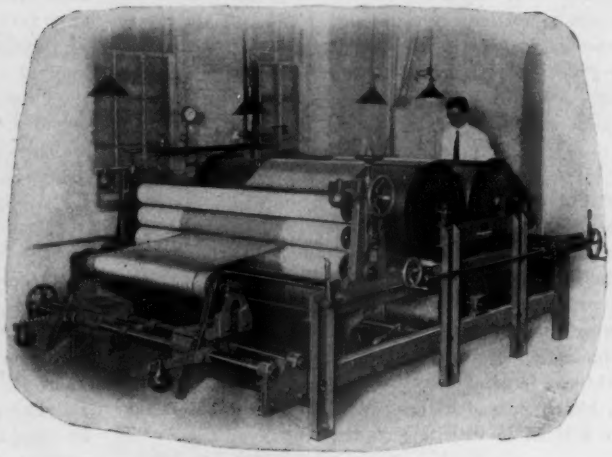

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Roving Frame Cone Design.

EDITOR COTTON:

I read in December COTTON, on page 139, what "C. C. (N. J.)" has to say with reference to fly frame cones. It will be remembered that some time ago, "G. D. S." submitted a question about thick and thin places, and "T. A. D." suggested a method of covering his cones with print cloth to change the curve, and the inquirer reported that this solved his problem. "C. C." at the time made some comments for which he apologizes in the December issue, after reading the letter from "G. D. S." saying that the suggestion of "T. A. D." solved his difficulty. "C. C." makes the statement, "It never occurred to me that the builders had constructed cones having the wrong curves."

Don't you think that a concern building roving frames has men competent to figure and construct the proper cone curves? I think if many mill men left the design of the machine to the builders, there would be less friction. I know of many cases, on the other hand, where helpful constructive criticism has come from the mills.

Many things in the design of roving frames took years of time and thoughtful study to make them as they are today. Some young mill men think they can construct the machine more perfectly in just a few words. Let them try it; I wish them luck.

I don't mean this as a reproach to "C. C. (N. J.)", but as just a little information to pass along.

H. D. (MASS.)

Static in the Card Room.

EDITOR COTTON:

I noticed in the December issue a statement of "C. C. (N. J.)" concerning static in card rooms. He says, "I have only seen one card room where they had any appreciable difficulties with static. The trouble at that mill was simply a case of inadequate humidifying equipment. I have not as yet seen a mill in this sort of trouble that was equipped properly with a good system of humidification."

Let me say in reply to this that I was in a room at one time, running tests on floor sweeps and comber noils, making 8s mop yarn, and that the building was outfitted with the finest humidifying equipment Parks-Cramer could furnish.

This test was being made on a set of full roller cards and static was present at the breaker card doffer and comb. I would wager that neither "C. C." nor anyone else could stop the static until a radical change was made in the card at that point. This was done and the static overcome.

C. H. (MASS.)

The 1927 edition of the "Silk and Rayon Directory and Buyers' Guide", an English directory compiled by Arnold H. Hard, has been issued by John Heywood, Ltd., Deansgate, Manchester, England, the publishers. This is a very comprehensive reference book on silk and rayon, listing rayon and silk producers and users, and other valuable information. New features this year include a table of rayon duties, glossaries of silk and rayon terms and a chronological history of rayon. The net price is 21 shillings.

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Cork Rolls and Winding Motions.

EDITOR COTTON:

In the November number of COTTON, "Contributor No. 4362" states, in the first paragraph of his article entitled "Cork Rolls and Winding Motions," that my letter published in the June issue was satisfactory to him. That is why I am coming back.

In the second paragraph, he claims "It seems impossible to convert 'Wash' to the belief that cork rolls which have been in use for several years are no better aid in the performance of correct drafting than are the leather covered rolls." The cork rolls I am using have not been on the market for several years.

What he states in the third to the seventh paragraphs can be answered by answering paragraph eight. In this paragraph he states "I still fail to see how this over-drafting shortens the strand in process, and also how cork rolls claim superiority to leather rolls."

He should get his dictionary and look for the word "over" and he will find that it means "above in measure." The same can be applied to a motor or to a steam engine. When the load is too great they refuse to function properly. There is a great deal of difference between the term over-drafting and excessive drafting. This is where our friend is twisted.

In the art of drafting, the term over-drafting means that the top leather roll is unable to follow the driven surface speed of the steel roll, due to the resistance offered to it by the strong fibers in the field of action between the two rolls. In other words, instead of pulling the fibers from the second roll, its surfact glides over the fibers and of course the strand is made heavier and shorter.

It makes little difference whether the strand is even or uneven, you know what to expect from the intermittent action of the top leather roll which is termed over-drafting.

As regards cork rolls being superior to leather rolls, I have proven that to my satisfaction by the following tests. (1) On my intermediate frames, I shipped on an average of 40 rolls a week, and since using cork rolls beginning May 20th, 1925, only eight rolls were shipped. Quite a saving. (2) I placed a leather roll in a vise and screwed the vise until the boss was flattened. When removed it was still flat. I made the same test with the cork roll, with no effect, which means that you can let a machine stand with these cork rolls and get no evil results.

In the month of May, 1925, I equipped two slubbers with cork rolls, and to date (December, 1926), 14 rolls have had to be changed. With leather rolls we changed about twenty, on the average, per week.

"Contributor No. 4362" can go on and spend money foolishly for his company, but I think too much of the concern where I get my bread and butter, to turn my head to something that is not as good.

Let this contributor mail me a few rolls, say about six, care of COTTON, to be mailed to me, and I will have them covered so he can try them. I want to do this to prove to him that he does not know what he is talking about.

In the 10th paragraph he states "'Wash' surely has gone astray on drafting, and as this department is solely established as a means of we mill fellows offering suggestions, I am always trying to find a way or means by which I can pass something good on to my friends in our discussion department, and here I point out to our friend 'Wash' that in his letter in the December (1925) issue of COTTON he made a serious mistake, as many other mill men do, when he stated that: 'On a speeder the surface speed of the front roll and the excess surface speed of the bobbin over the flyer should be equal, or the bobbin must be made to retard so that its surface speed will be equal to the surface speed of the front roll.'"

The first refers to the bobbin-lead, and the second to the flyer-lead.

Then in the 12th paragraph he gives us the figures to prove his case.

Now mind you, this man figures from the empty to the full bobbin as you would figure the indicator on a steam engine. But it is so different with a fly frame. What about the slippage of the cone belt, the different hanks, the different twists, the different speeds, the different stock, and the different conditions of the drawing rolls?

There is no greater authority on fly frames than Fay Hamlin Martin. From the proceeding of the semi-annual meeting No. 85, Saratoga Springs, N. Y. September 29-30, 1908 of the National Association of Cotton Manufacturers, I quote parts of an article presented by this genius. "How bobbins are wound is often puzzling to even practical men, but it is simplicity itself. So many inches are delivered by the front roller per minute, and just the same number of inches must be wound upon a bobbin in the same time. Now consider the spindle and flyer as standing still, and we will assume that the roving will draw through the flyer without twist and without breaking. Thus it will be seen that the surface speed of the bobbin must equal the surface speed of the front roller, which is constant. This continues for one layer upon the bobbin, at the end of which time the revolutions of the bobbin are reduced in the right proportions to keep the surface speed the same as before, and so on until a full bobbin is formed. At the end of each layer an adjustment of the revolutions of the bobbin take place, and this is done by automatically and positively moving the cone belt to a new position.

"The amount of movement is the same all through the building of the bobbin for a given hank. As each layer is being put upon the bobbin, the cone belt is working upon certain diameters of the cones to produce the right revolutions to keep the surface speed always the same."

Great stuff, from a great man, that proves my case.

WASH (R.I.)

One of the important additions to the literature of the dyeing of rayon is the recently published shade card of the National Aniline & Chemical Company, Inc., entitled Dyes for Rayon, in which is shown a series of fifty-six dyeings on knitted goods. The selection of dyes as shown on the patterns covers a wide range of shades which will undoubtedly prove of value to practical dyers handling this material. Supplementing these dyeings are full technical instructions for the application of the dyes shown, special attention being directed to the line of National Solantine dyes.

"Half trying is the secret of many a failure."

Knitting Section

THE knitting machines produced by Scott & Williams, Inc., foreshadow the trend of the hosiery market.

This anticipation of the needs of the industry has, in no small measure, contributed to the reputation of this firm for giving excellent and understanding service.

To act as a laboratory for the industry is one of the most valued functions of the company.

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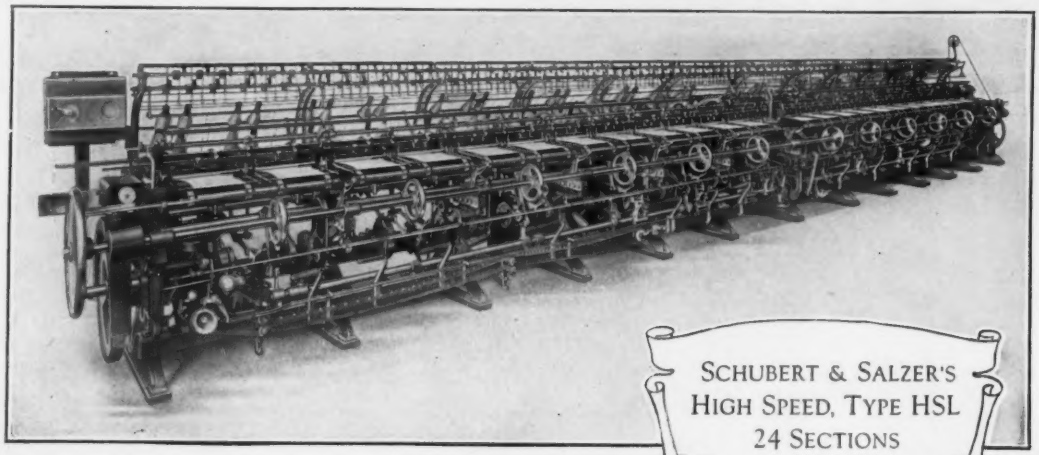

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HIGH SPEED, TYPE HSL
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Quality Counts and so does High Speed!

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If your production and overhead costs are *higher* than competitors, the chances are that your price is not particularly favorable.

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"Ask the man who operates one"

Also Full Fashioned Hosiery Machines
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HOFMANN

ALFRED HOFMANN, Inc.

WEST NEW YORK NEW JERSEY

Practicing Economies in the Dyehouse

By C. B. ORDWAY

The knitting mill owner is always interested in the question, "Can the dyehouse expense be reduced, or production increased and the cost per dozen of finished hose lowered?"

This is the problem that every wide-awake dyehouse chemist and superintendent is up against now-a-days. But the general manager or mill owner must first consider the necessary tools that his textile chemist must have to successfully work out his problems. A small, though well-equipped laboratory is as essential to a modern hosiery mill as a good northern light is to matching shades.

Will the present demand for light shades continue? That is a question which can be answered only by the fairer sex, according to their dictates from Paris on wearing apparel. For, if heavier shades come back into vogue, the dyer has the double problem of maintaining present costs on dyestuffs and still be progressive on the use of faster dyestuffs, for which there is a great demand coming in the hosiery trade.

In his laboratory, the head dyer should have a trained technical assistant, if he has to devote all of his time to keeping up production. For the checking and testing of incoming rayon, yarns, chemicals and dyestufs are just as essential as the maintenance of a corps of machine fixers in the knitting department.

However, there are a few superintendents who feel that the dyehouse can take an unevenly mercerized yarn and make it okeh on all varieties of shades. The same applies to rayon, where the dyer will find as many as four shades in some batches that have been dyed.

Of course, such advance checking will mean more clerical help and reliance on the dyehouse, but truly this makes the textile chemist show his real economic value in relation to the final cost of each dozen of finished hose. By testing the rayon for affinity to some standard dyestuff each time, one can rid the finishing room of a great number of re-dyes that are really "average" and not actually re-dyes. The company can then be in a position to demand a rebate for rayon that is an "off-color" lot, and use this particular batch of rayon on black or by itself in some special list of shades.

This testing of the rayon will eventually include its ability to withstand bleaching without being tendered or having to be run in a special bleach that is slow and retards production.

These various tests suggested for rayons are just as essential as their knitting qualities, but have not been given the same amount of consideration by the knitting mill man when contracts are made for rayon. As a rule, the dyehouse usually receives a notice to be ready to dye and finish certain new styles—that may include entirely different types of rayon—without a moment's consideration of the increased cost this new rayon may cause in the dyehouse, or its finishing properties and the difference in the percentage of seconds and re-dyes the change in rayon may bring about.

The correct method of preparation of a three-fiber hose containing Viscose type rayon, 1 to 3 strand silk and mercerized cotton heel, toe and top, for the dyebath, is a good preliminary boil-out for 30 to 40 minutes in a bath containing two to five per cent silk degumming oil, or two per cent of 50-per cent sulphonated castor oil, with one per cent modified soda, or preferably two to three per cent tri-sodium phosphate. In such a case the oil simply acts as a carrier, and the mild alkali cleanses the rayon of the mineral oil used in coning the yarn, and the sericin or gum off the one strand of silk can be washed off with the castor, by giving a hot wash after the boil-off bath is let out.

This preliminary boil out naturally necessitates a second bath in which a softening oil like sulphonated olive oil can be used to soften the rayon while dyeing the required shade. The two-bath method on rayon and three-fiber hose gives a better feeling and dyed product than one bath, and can be made as economical as the one bath if the lots of goods are large enough to permit this work being done on a large scale.

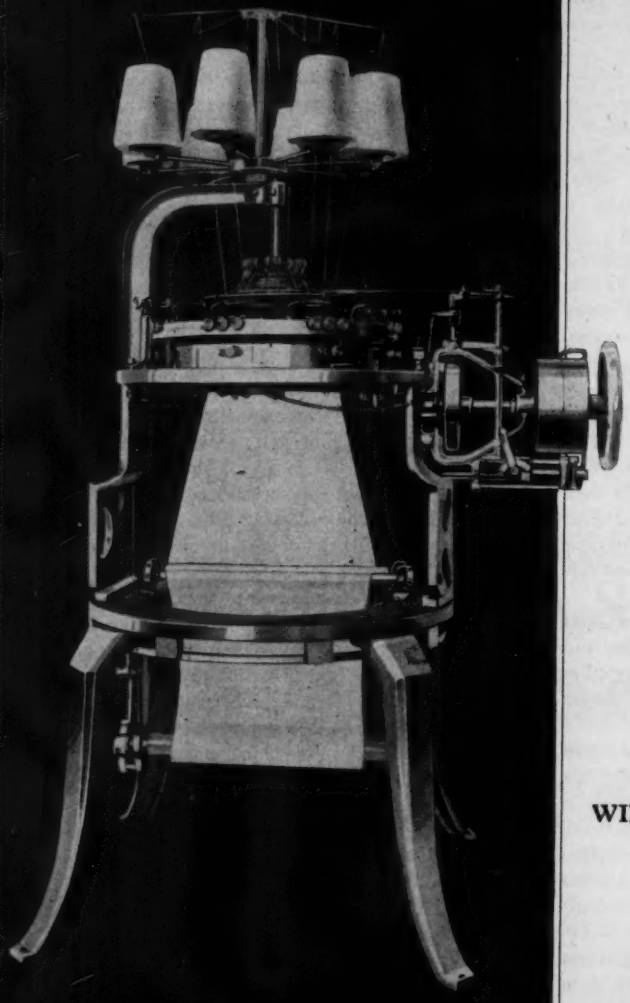
The advantages of the one-bath method are obvious in that it cuts the time in half, though there is a greater tendency toward streaks in dyeing this way, and where the dyehouse cost may be cut, it will necessitate larger lots being run to secure the necessary dozens for the order.

There are various formulae to use on the one-bath method with three-fiber hose. One is: Two to four per cent sulphonated castor oil and two to four per cent tri-sodium-phosphate or any other product of similar nature that acts as a penetrating and cleansing agent at the same time. The formula can be varied to suit the condition of the rayon. If this formula does not give a good feel to the hose, try: one to two per cent sulphonated olive oil, one to two per cent sulphonated castor oil containing five per cent of pine oil, and two to four per cent tri-sodium-phosphate.

The one bath method sometimes requires a longer time in the dyebath because the hose may become heathered. This naturally has a tendency to give the rayon a harsher feel than in the two-bath method, where one can obtain a better union between the cotton and rayon in a shorter time.

For peroxide bleach and dyeing black, the one-bath method is much better and gives a better finished product. The one-bath method as applied to peroxide bleach, using Solozone for example, can be regulated so as to scour the rayon and cotton and also bleach at the same time, using two per cent of sulphonated olive oil, two per cent of sulphonated castor oil containing five to ten per cent of pine oil, three per cent tri-sodium-phosphate, with the necessary percentages of sulphuric acid and Solozone, and three to four per cent silicate of soda added in hot water. If the bleach bath is maintained at 180 degrees F. for 30 to 40 minutes, this will scour the rayon and then the bath can be allowed to cool to 140 degrees F. to finish the bleach.

When the bleach is finished by flushing the bath to wash off the oil and dirt and letting off the bath, instead of bringing the wash-out bath up in cold water, if a hot water connection can be made it will save time in handling the goods, by giving one or two warm water washes and then finishing the goods in a softening bath. By this quick change from hot to cold water and then heating up again, the rayon fiber stiffens considerably, but if the hot



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WILDMAN
THE WORLD'S STANDARD

WILDMAN MANUFACTURING CO.
Norristown, Pa.

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WILDMAN
SPRING NEEDLE BODY MACHINE

water wash is available on finishing the bleach the rayon can be kept more pliable and will give a softer finish when run in the softener bath, which should contain two to four per cent of sulphonated olive oil and castor oil fifty-fifty, or if one prefer, some specially prepared softener of the liquid emulsion type.

In dyeing with either the one or two bath method, the use of Glauber's salt is best to add first, so as to give the heels and toes time to become penetrated, giving this 15 to 20 minutes boil before the addition of the common salt. The larger the addition the more tendency there is to cause a precipitate in the dyebath that will stiffen the rayon.

In the dyeing of heavier shades, if Glauber's salt only is used, a softer feel on the rayon is a result. This is especially true of blacks, cordovans and blues, if dyed mostly with Glauber's.

If there is some very light sky, pink or lavender shade that seems to require a bleach bottom on the three-fiber hose, the following formula should be satisfactory: five per cent tri-sodium-phosphate or some isomeric compound like Oakite, using one to two per cent neutral olive soap and boil for one hour. Then give a warm wash. This will generally give the hose a white enough base for light shades and will do away with the half bleach. The half bleach is such an uncertain proposition, and then it will weaken the rayon much more than the boil-out suggested.

The topic so far has been exclusively on the Viscose type of rayon with one strand of pure silk. There are numerous mills that have the viscose type rayon in connection with acetate silk or Celanese. In this case, the use of degumming and sulphonated castor oil is slightly injurious to the Celanese at temperatures above 180 degrees F. By using sulphonated olive oil with two per cent tri-sodium-phosphate, one can dye this type of combination successfully. The higher the temperature used, the more Glauber's salt should be added as it has a tendency to prevent any hydrolytic action on the acetate silk above 180 degrees.

Sulphonated olive oil with ¼ to ½ per cent aqua ammonia acts as a good dispersion or carrying agent for the acetate silk colors, such as SRA and Setacyle, in the dyebath.

On February 1st the E. H. Jacobs Manufacturing Company, of Danielson, Connecticut, began the manufacture of lug straps, dobby cords and loom pickers at their new branch plant at 501 West Palmer Street, Charlotte, N. C. Production on these and other loom supplies will be increased rapidly. The E. H. Jacobs Manufacturing Company was established more than 60 years ago. This concern manufactures the well known "Jacobs" line of loom appliances which will be produced at Charlotte as well as Danielson. The purpose of establishing the southern factory, the company states, is to give better service to southern mills and to manufacture southern products by southern labor with southern-made raw materials. Former Senator Frederick A. Jacobs, of Danielson, is president; Joseph H. Chadbourne, Jr., of Charlotte, is vice-president in charge of the Southern factory; W. Irving Bullard is treasurer and Walter Anderson assistant treasurer. Mr. Bullard is also treasurer of the National Association of Cotton Manufacturers, and an officer and director of several cotton mills. He will spend a part of his time each month in the South.

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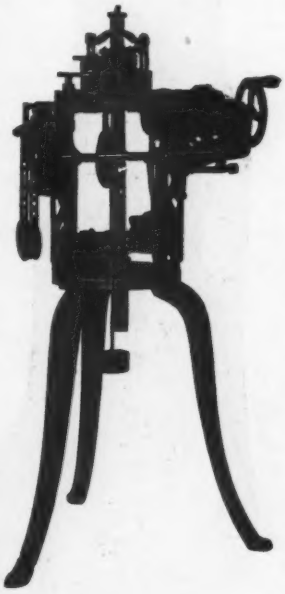
As a user of knitting machines, you demand the highest efficiency—economy of upkeep and excellence of performance.

Years of experience enable us to build machines leading in efficiency. To insure against expensive breakdowns and renewals, we make every part in our own factory, on our standard of reliability. The performances of Brinton machines are noteworthy for quantity, quality and uniformity.



We will be glad to furnish information of our complete line.

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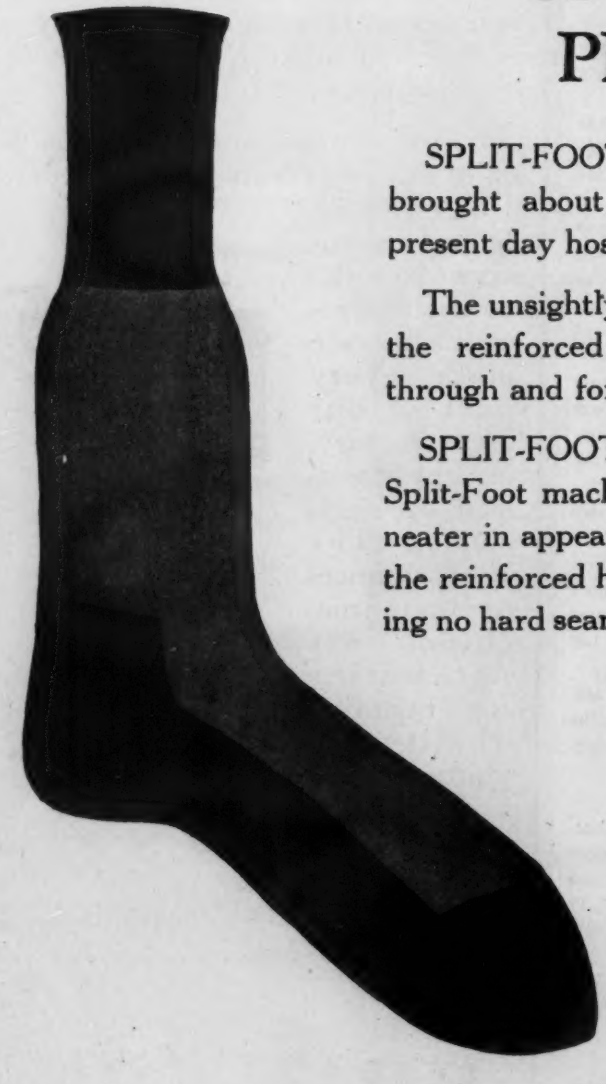
The "BANNER"

SPLIT-FOOT PRODUCT



SPLIT-FOOT HOSIERY, the new creation, brought about by the main disadvantage in present day hosiery, namely:

The unsightly inside fringe of splicing ends in the reinforced portion which tends to slip through and form whiskers on the outside.

SPLIT-FOOT hosiery made on "BANNER" Split-Foot machines is smoother on the inside, neater in appearance and has added strength at the reinforced high splice and double sole, having no hard seams.

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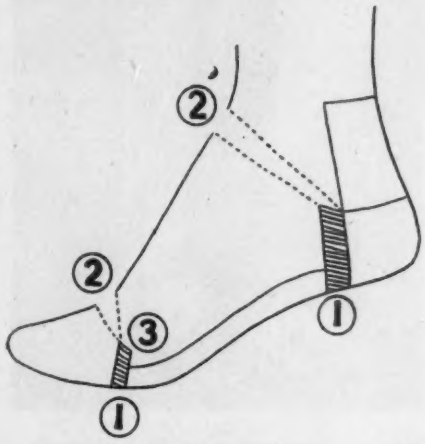
Philadelphia Sales and Show Rooms
Colonial Trust Bldg., 13th and Market Sts.

A New Type of Circular Knit Hosiery.

The Westcott Hosiery Mills, of Dalton, Ga., has announced to retailers it is now in quantity production on a new type of circular knit hosiery to retail at $1.00 and directly compete with full fashioned hose in regard to appearance and fit.

Westcott has invented an attachment for knitting machines which makes possible this new process of knitting.



At the points numbered "1" needed fabric is added, and at the points numbered "2" excess fabric is removed to correctly shape the foot and place it at the correct angle with the leg. Dog ear knots and folds at point "3" are eliminated to insure perfect smoothness.

With it excess fabric is removed from the top of the ankle-instep and the top of the toe by the removal of links, while additional needed fabric is added to the sole at the toe and heel by knit-in extensions. These changes are illustrated at 1 and 2 in the sketch. The result is a stocking with the foot placed at the correct angle to the leg and shaped to give a smooth fit at the foot and ankle without the fabric wrinkling or bulking at any point. An examination of the accompanying photographic reproductions clearly shows the effect of the described changes.

Dog ear knots and folds, that heretofore came at the sides of the toe are entirely avoided by the new knitting process. No dog ears and no seam along the sole result in what is claimed to be the most comfortable of all stocking feet. The angle of the foot to the leg is like that of a full fashioned stocking, while the flare top and the shape at the calf and lower leg are also similar to the full fashioned type and entirely different from the ordinary circular knit stocking, it is pointed out.

The manipulation of the tensions in knitting make the foot very elastic, giving a snug fit to all the foot contours, thus preventing wrinkling at the ankle, instep, heel and top of toe, and at the same time allowing the wearer of the stocking to easily slip it on the foot. The double slipper sole is entirely concealed by the lowest slipper, it is claimed, while the small "Daintee" heel adds to the elasticity and prevents the fabric bulking half around the leg.

A leading trade publication, circulating to the larger department stores, stated in an article in a recent issue that "An improved circular knit stocking, representing indeed the first noteworthy improvement in this hosiery division in recent years, has been perfected by the Westcott Hosiery Mills."

Although the first announcement of the new type of hosiery was made only the latter part of January, The

The Wescott new type circular knit stocking at the left shows how correctly placing and shaping the foot prevents wrinkling at the ankle, instep, heel, and top of toe.

BLEACHERS!

"My bleach is better than yours."—

"How do you get that way?"

"Well, my Solozone-white is fast

I do not injure the fibre.

I cut out Seconds.

My goods don't yellow.

They are soft and elastic."

"You win; but mine costs much less."—

"Wrong again. Couldn't sell much if it did:

I'll turn out three lots to your one,

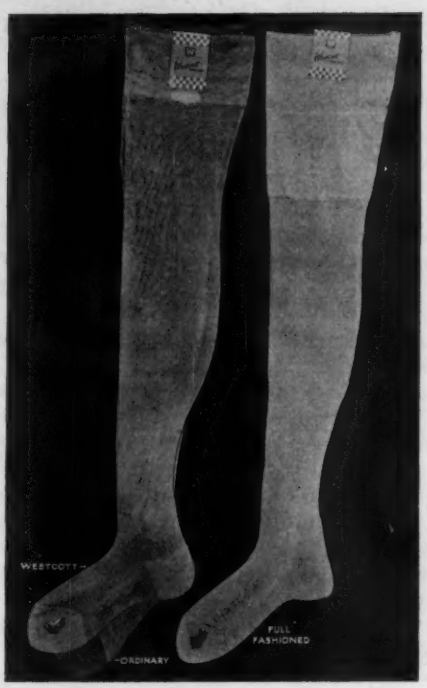
My labor is about one third,

So is my water and steam and

Cost of equipment.

I bet we'll split even on cost".

THE ROESSLER AND HASSLACHER CHEMICAL COMPANY
713 Sixth Ave. New York



A comparison of types illustrating the angle of foot to leg, as well as the flare top and shaped calf.

Westcott Hosiery Mills report that daily orders for the new hose are four hundred per cent greater than at this time during any previous year in the mill's history.

Scott and Williams made the attachments for the new process of knitting the Westcott stockings.

Shade Matching.

L. H. McGinty, in discussing shade matching in a recent issue of the Textile Colorist, says that one of the textile magazines published an article some time ago by a writer who deplored the scarcity of information on this subject, and having found no article but his while searching in a huge stack of magazines for such information I considered him justified.

Unfortunately, the author volunteered only a few basic principles which, necessary as they are, can serve only as a starting point. What is needed is some sort of working guide. Not all prospective dyers are adept at manipulatting colors. At school the range and variety of dyes to be considered is so extensive that nearly all of the laboratory time is needed simply to make specimen dyeings. In the mill he who knows is more than apt to be reticent.

Matching shades can seem something of a formidable problem. One sees formulas with six to fourteen dyes in them. To know precisely how each one of the dyes functions—it seems incredible. These formulas must be arrived at through luck or by the promiscuous cut-and-try method. (Some of them are).

One is told, too, that a few persons simply have "an eye for colors," and know intuitively what a shade needs. You must be a born dyer.

This, I am convinced, is nonsense. Those who are not color-blind can learn to match shades quite efficiently through practice; but is is scarcely to be expected that everyone should show the same aptitude.

The days are going when dyeing was, like healing, somewhat of a black art and done best in propitious phases of the moon. Dyeing is a science, though a minor one and dyes behave under given conditions with much more consistency than dyers, who are prone to lay the blame for their own misjudgments on caprices of the dyes, the water, the machine, the material and so on. While it is true that these factors can considerably influence dyeing, it is an influence subject to chemical and physical laws and by no means an occult one.

Reduced to its elements every shade is red, blue, yellow or a combination of these three primary colors. If it is composed of but two of the three it is a secondary color i.e., green, orange or violet. If it contains all three of them it belongs to the almost infinite category made up of the complementary colors such as the browns, grays and mauves. It follows that no more than three properly chosen dyes should be required to match any possible shade.

In discussing shade-matching it is convenient to make use of the terms "tone" and "depth."

The tone of a shade is the particular tint produced by a certain ratio of the primary colors. A combination say, of 20 percent red, 30 per cent blue and 50 per cent yellow produces a tone that cannot possibly result from any other combination. The kinship of another shade having this same ratio can be recognized although one of the two is considerably fainter than the other, which brings in depth or the relative *amount* of color in the shades.

In matching a given shade the problem is, then, to duplicate both the ratio and the amount of colors present in it. But in working with dyes one does not have pure primary colors to deal with. The reds have a bit of blue or a bit of yellow in them, and the blues and yellows are likewise slightly merged with one or both the other members of the trio. However it is fortunately not necessary to solve the problem of matching a shade with mathematical accuracy involving fractions of a per cent, but simply to approximate a solution cleverly enough to deceive the eye which is the only arbiter.

This can be done by patience and familiarity, not difficult to gain, with a few good dyes and the intelligent application of simple fundamental rules. The latter must wait on the education of the eye and consequently the task is not easily performed at once. One must have matched grays, for example, in order to detect a slight excess of red in the sample over that in the standard; after having observed the effect of a large excess the eye gradually attains skill in noting small ones.

As the primary colors approach an equal combination they begin to take on the neutral tone gray and to lose their identities to unschooled vision. One primary color tones down or subdues a combination of the other two and the reverse, of course, has the same effect.

Given a standard shade to match and a trial dyeing that is too yellow, the correct procedure, then, is to increase the red and the blue, provided of course the trial shade will stand an increase of depth.

Usually, as in the foregoing instance, the tone of a trial shade will have in it too much of a single primary color. It is like three horses in a race. One will nearly always lead and two will not often be abreast. So in bringing up the lagging primaries one will ordinarily have to be brought farther than the other.

The most systematic way to make increases and cuts is by percentages. One learns the effect of 10 per cent, 20 per cent and 30 per cent changes and does not have to make them at a hazard. Trained this way a dyer does not make the mistake of adding a cautious 3 per cent or 4 per cent of dye and looking for a distinct change of shade.

It is unwise to rely too much on the effect of additions to an original bath in establishing a formula either in a beaker or in a machine. Straight dyeings are much more trustworthy.

The phenomenon of "ageing," the manner in which certain dyes after a time change tone is familiar to all dyers, most of whom must understand the necessity of steaming a sample dried artificially. But few direct dyes age considerably after they have absorbed their quota of moisture, and the dyer should not cultivate the habit of leaving a shade in the lurch persuading himself it will age up to standard. This is simply a way of begging the question. Time is kinder to samples that were originally good matches than to the ones that were not.

Among the Knitting Mills.

The full-fashioned plant of the Claire Hosiery Mills, Philadelphia, has been sold, the name of the purchaser not being disclosed. According to reports in the trade, it is understood that the plant will be taken over by a manufacturer. The equipment embraces 35 fine gauge machines. The mill was established about two years ago by the Belber interests after the Real Silk Hosiery Mills of Pennsylvania had acquired the mill then operated by the Belbers, who, speaking of the present transaction, say they prefer to make no statement at this time.

An unconfirmed report is that John K. Voehringer, who in December sold the Mock Judson Voehringer mill in Philadelphia to an attorney representing a Middle West manufacturer, has bought a full-fashioned mill in Hatboro, Pa. In the absence of Mr. Voehringer and the principal owner of the Hatboro mill, the report could not be confirmed, and is denied by a person interested financially in the enterprise.

Additional upstate Pennsylvania mills of William F. Taubel, Inc., are being discontinued, for the time at least, the company apparently intending to concentrate production on their two full-fashioned and two seamless mills in Philadelphia and in Riverside and Camden, N. J. Clarence Taubel, president of the company, sailed early in February for England and Germany, intending to return some time in March. The Taubel seamless mills in Tamaqua and Shellington, Pa., were discontinued some time ago, and recently operations ceased in two mills in Reading and one in Lebannon.

The Shillington (Pa.) hosiery mill of the Martin H. Fritz Estate is being liquidated and the business probably will be discontinued. Another hosiery mill in the same section of Berks county, the Wyomissing Knitting Mill of H. D. Lenibach, is advertised for sale at public auction on March 26th.

The recently incorporated Moosehead Hosiery Company has taken over the business of the Manheim (Pa.) Hosiery Company, and will manufacture 176-needle cotton hose and golf hose, operating in the building formerly occupied by the Manheim Underwear Company. The principals of the new corporation are the S. H. and H. W. Stork interests operating mills at Adamstown and Denver, Pa., in the manufacture of low end cotton half hose.

F. Osborne Pfingst, a son of George B. Pfingst, and vice president of George B. Pfingst, Inc., yarns and silk Philadelphia, has plans under way for establishing a full-fashioned hosiery mill in Greensboro, N. C. A part of the product, it is reported, will be hosiery of silk and rayon combination, as a dollar proposition in retail stores.

The Browning Hosiery Mills, Chattanooga, Tenn., have, it is understood, acquired an additional building at Twelfth and Central Aves., and will remodel into an extension of their present facilities.

R. C. Collier, of Montezuma, Ga., has leased the knitting department of the Icemorlee Mills, at Monroe, N .C., for two years, and will operate the mill under the name of the Piedmont Underwear Mills, Inc., which have been chartered with a capital of $50,000. D. E. Liddy remains as vice-president and manager of operations at Monroe. Mr. Collier is president of the Montezuma Knitting Mills.

R. C. Huffman has promoted a new knitting mill corporation at Morganton, N. C., which it is understood will erect a plant adjoining the Garrou Knitting Mills there for the manufacture of full-fashioned hosiery.

An addition for the knitting department is being built by the Golden Belt Manufacturing Co., Durham, N. C. Six 20-section and seventeen 24-section full-fashioned machines will be installed.

Dixie Hosiery Mills, Inc., and Southern Hosiery Company have begun the remodeling of a building in Fort Worth, Texas, for the manufacture of hosiery.

Twenty additional seamless machines are being installed by the Knit Well Hosiery Mills, Inc., East Durham, N. C.

Louise Knitting Mills, Durham, N. C., is rebuilding the plant recently destroyed by fire. A 140x60 foot brick building, two-stories, will house 200 knitting machines.

It is understood that the Wilkes Hosiery Mills, North Wilkesboro, N. C., have let contract for a 60x100 foot addition.

To provide for enlargement and expansions, the Spalding Knitting Mills, Griffin, Ga., have exchanged properties with the Norman Buggy Company, and the additional floor space will permit increasing the hosiery mill capacity about 200 per cent.

A substantial addition will be made by W. B. Davis & Son to the plant at Fort Payne, Ala. The building will be three-stories, 180x75 feet.

Report from Kansas City, Mo., is to the effect that K. A. Mezher, 411 Continental Building, is planning the erection of a knitting mill.

Revere Knitting Mills, Philadelphia, will, it is understood, install additional machinery to increase the capacity for ladies' and children's hose production.

The Oak Knitting Mills, Syracuse, N. Y., will move to a southern location. A. G. Velasko, manager, has been negotiating with several southern plants with a view to taking over some existing property.

The American Cellulose & Chemical Manufacturing Co., Ltd., producers of Celanese brand yarns and fabric, plan to double the capacity of their Cumberland, Md., plant during 1927, it is announced by Major E. C. Boreham, general manager.

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Do the Ankles Knit the Same?

EDITOR COTTON:

On a Scott & Williams Model K machine, running three thread pure silk over 150 denier rayon, regardless of the links contained in the chain to obtain the desired length of hose, and the stocking measuring exact and the weight of the hose correct on twelve machines, does it prove that all ankles of the hose have the same tightness, or is there liable to be a difference in the courses per inch in some of the hose? I would be grateful to readers of COTTON for expressing their opinions on this subject.

BOB (CANADA)..

Needed Improvements on Hosiery Equipment.

EDITOR COTTON:

The hosiery industry in the past decade has made many remarkable advances, due mainly to the demands of fashion, and competition in the industry. This competition has been a big stimulus for improvement, and most every manufacturer has attempted to produce a fabric superior to that of his competitors, introducing new designs and fabric in order to keep in the lead. This competition has been the means of our having such remarkable knitted fabrics as are produced on our machines today and will no doubt continue in the future.

Our machines, as they have been developed at the present time are remarkable examples of the engineering forces of the present day. But I believe as competition continues, manufacturers of these machines will make improvements which seem impossible at the present time.

The leading hosiery machine builders in this country during the past few years have been working on new models of seamless hosiery machines. The nature of these improvements have not always been given out due to the fact that frequently they cannot be applied to the present machines now in use in the mills. These improvements, it can be imagined, must be worth while, and when the time comes for their introduction to the hosiery trade, they will probably do a great deal to keep some special type of machine in demand.

I believe the trend in the better class seamless hose will be more along finer gauge machines due to the better appearance when finished.

The disadvantages of the seamless hose at present is the wide ankle, and open toe as it is dropped from the machine. This type of hose has been losing ground due to these faults, but these faults are going to be overcome. Machines will be designed so that the ankles of the hose will be smaller in diameter than the top of the hose as it leaves the machine. This will not be done by tightening the stitch, or boarding, as is done at present, but actually smaller in diameter at the ankle than the top of hose, giving to the hose the ankle appearance of a full fashioned hose.

In order to do this, probably the cylinder will be redesigned in such a way as to narrow the fabric as it approaches the ankle of the hose. When this has been accomplished we will have a hose that will hold its own with the full fashioned work.

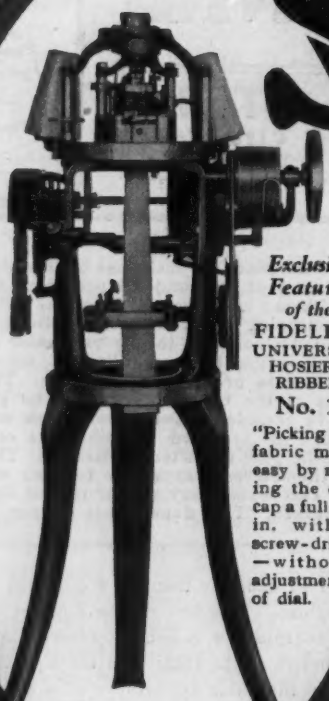
Sometime in the future, looping of the open toes on seamless work will be done away with, as this will be done on the seamless machine during the knitting process. Experiment along this line has been carried on for a long period of time, and sometime we will have it. An improvement of this nature will of course do away with the looping machine, cutting the cost of producing a hose of this type materially.

On certain types of seamless machines, seaming attachments are being used to insert a seam up the back of the hose to imitate the full fashioned stocking. Although the seam which is inserted by these attachments is very good, some hosiery manufacturers are still clinging to the old methods of inserting their seams on seaming machines. They state that the seams inserted by these attachments do not look like the real seam, and the difference in appearance between the attachment seam and that put in by the seaming machine is such as to be worth the extra expense due to the appearance when finished.

Machine manufacturers have been working diligently on these seaming attachments, to produce a seam as good as that made on the seaming machine. The time will come when all manufacturers of seamless hosiery can do away with the expense incurred by having seamers for doing this seaming work, thereby further cutting the cost of producing this type of hose.

There will be many more improvements made along the

Strength!



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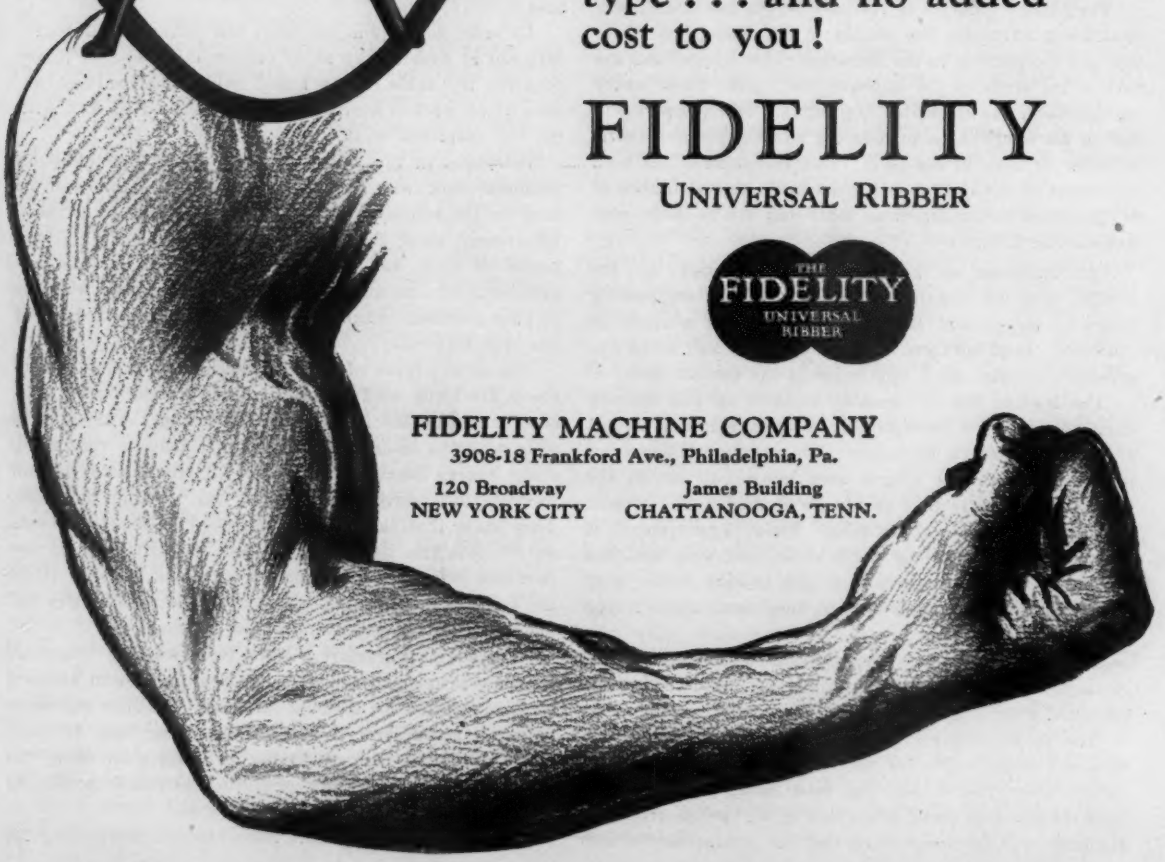

FIDELITY MACHINE COMPANY

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seamless line, some of which I believe will be the following:

1. An inspecting machine is needed which would inspect the work after it has been knit. This machine would take the place of the present large force of inspectors which is needed at this time. This may sound like a "fly-by-night" idea to some, but thought and imagination given along this line might produce results.

2. An automatic yarn change is needed whereby as the cones of yarn run out on the machine a new cone will automatically take its place, without the stoppage of the machine.

3. A means is needed whereby sizes can be kept more uniform, as the hose is being knit on the machine, probably a gauge attachment which would be regulated automatically by the stitches as they are being formed.

4. As regards the handling of machines by operators, the seamless machines will be designed so that more machines per operator can be handled. For example as to how this can be done on string work machines, take the Scott & Williams machine. At the present time each operative is taking care of between 12 and 20 machines of this type. If the machines are arranged in an horizontal line, a conveyor system can be applied here that will enable, in my opinion, two operators taking the place of three or more and handling more machines.

Now use your imagination and picture to yourself a conveyor which sits a few inches above the floor in front of the whole line of machines. From each machine at the bottom of the cylinder tube is a chute, which projects out over the conveyor. At the extreme end of the set of machines the girl is sitting on a chair directly in front of this conveyor. As the stockings reach her coming down the conveyor she inspects them, the same as though she were taking them out of the work pans. At this point in my explanation certain questions arise as to who is going to keep the machines going, such as changing yarns, threading of machines, etc. If a stocking comes to the inspecting girl, with a broken needle, how is she going to know from which machine that stocking has come?

On a conveyor arrangement of this kind, one operator and one inspector is needed. The inspector does nothing but keep the work inspected as it reaches her, the operator attends to the threading of machines, etc. In order to tell what machine a defective stocking has come from it would be necessary to make use of the fashion marks attachment, and tinted yarn for the inside of hem, or tinted yarn can be used for the splicing yarn in the foot of the hose.

Say for instance that we have a line of forty-eight machines. For the first machine we will use the regular white yarn; second machine, blue tint; third, green tint; fourth, yellow; fifth, orange, and sixth, pink tint. Each succeeding six machines will have the same colors as the first six, a total of eight sections. Now we have six machines of each color yarn. It is now necessary to distinguish these six machines, in all eight sections from one another, and that may be done with the fashion mark attachment, with which most machines are equipped.

The spacing of the fashion marks is a very simple matter and is obtained of course by the fashion links. This system of marking the work would depend upon the amount of machines to be handled or run by the two operatives. Methods of this type would require an operator to specialize on this special operation, resulting in more efficiency.

This system, as I have explained, may be practical, or it may not, but it shows some of the possibilities that can be worked out for the handling of more machines per operator. Systems along the line explained should be given thought and such thought may work to the good advantage of the industry.

In the larger organizations conveyor systems can be used on a larger scale than at present. This will do away with constant re-handling of goods in process and make for quicker delivery from department to department, resulting in more efficiency.

If departments are arranged in sequence of operation, this method of course is a decided advantage. Conveyors for the delivery of yarns to the knitting departments, from machines to inspectors, from inspectors to gray stock, from gray stock to dyeing and dyeing to finishing and finishing to shipping departments are all needed and should be used more and more as conditions permit, to increase the efficiency, which of course results in the cutting of costs.

CONTRIBUTOR No. 517

What Causes the Stains?

EDITOR COTTON:

We are manufacturing cotton and rayon knit latch and spring needle underwear, and use the Utica Mill Novelty Company's pipe dryer equipment for drying our cloth after extracting.

From time to time we experience what we call water stains in the fabric, and these are noticeable when the cloth is passing from the dry pipe over the spreader to the takeup. This trouble is particularly prevalent in our navy blue and green cloth.

We would greatly appreciate if you have any information you can pass on to us, advising the cause and how to overcome the trouble.

CONTRIBUTOR No. 1045.

Machine Allotments and Seconds.

EDITOR COTTON:

The first part of 1926 you published several letters giving the practice of the writers as to the number of machines allotted to fixers and knitters. These pertained to the Model K machine, and most of them mentioned the finer gauges. I noticed that only one fellow's ideas coincided with my own experience in the matter. He was the one who said he wouldn't have over 37 machines of 260-needle gauge to the fixer. I don't know who this fellow is, but I would like to reach across to him through "Knitting Kinks" and say "Amen, brother." And I'll venture to say that if we could get a record of his repair bill, as well as his seconds sheet and production record, we would find him comparing very favorably with the rest of us, and furthermore, I can easily imagine that his goods are selling and that the mill is really making a profit on it.

I think many mills are straining a gnat and swallowing a camel—no, that's not just the expression—I mean they are unwittingly making a mistake in thinking that they can decrease cost by increasing the number of machines to the

fixer. It does sound all right, and it is decreasing the payroll expense, but there's a limit, both ways. Look!

Sixty machines, Model K type, 260-needle, will average 2½ dozen per ten-hour day. That makes a total daily production of 150 dozen for the section. We will assume that we have one fixer for these machines, and that he gets $6.00 a day in wages. That makes four cents a dozen we pay him for labor. Now with this arrangement, a lot of mills think they are doing fine with eight or ten per cent seconds—really! There usually is a difference of about $2.00 a dozen between "firsts" and "seconds" on this stuff, so that at ten per cent seconds, that would be $30.00, or 20 cents for each of the 150 dozen. Adding this to the labor cost, that makes a cost of 24 cents a dozen, doesn't it?

All right, now take 40 of the same machines, and they will give a production of 100 dozen a day. Paying a fixer $6.00 a day for caring for this section makes it cost six cents a dozen for fixer's wages. All right, but wait—I know that by giving a man less machines, and keeping an efficient organization all of the way through, one mill I could name has the seconds down to three per cent. Using the same basis, that makes three dozen at $2.00 a dozen difference, or six cents a dozen that the seconds are costing, or a total of twelve cents a dozen cost against 24 cents a dozen where a man runs 60 machines. Is there any argument against it?

I know some of your readers will say that I have taken the extremes, as regards the percentages of seconds made, and also as to the number of machines, because more mills allot 50 machines to the fixer on this work than there is who allot 60 machines. All right, but the same thing applies even if the figures do come closer together. As for myself, from this one standpoint only, if I could be shown that having a fixer for every 20 machines would pay me, I would do it, but as there is a limit. I think that three per cent seconds is pretty good, and so I am using a fixer for each 40 machines. I know this can be done, because I am doing it.

There are other advantages in addition to the saving in cost, one of them being that with fewer machines to look after, a fixer is free part of the time and doesn't have to be running around like a chicken with its head cut off. And a fixer, just like any other man with a job that is not automatic and requires some thought, must have some time to think about his work and plan it out and not live from one job to the next.

But how can this cut down the seconds to that extent, did someone ask? Well, by giving the fixer 40 machines, and letting the girls look after 14 machines instead of 20 machines, we work it out in this way: the girls clip the double soles out and give the stockings an inspection as they come from the machine, and when she finds one with a defect in it, she hangs it up on a little hook at the front of the machine. This is a signal to her fixer to look at that machine and get busy on it, and in this way, the fixer sees every hole that is made on his machines, and we hold him responsible.

Our sizing man I think is the most important one in the knitting room. I use our head fixer for this job, and think it is an excellent combination.

Probably some of your readers will not agree with me, or will want more information. If so, I would be glad to answer any questions they ask through "Knitting Kinks."

CONTRIBUTOR NO. 1011.

What Is the Proper Inspection Standard?

EDITOR COTTON:

I should like to ask, through the "Knitting Kinks" department, how far the inspection department should go concerning inspection standards on stockings from knitting machines?

This probably depends upon the policy of the management, but what is a fair requirement as to quality of hosiery as it leaves the knitting machine? Can hosiery be obtained from a layout of say, 500 machines, every stocking being perfect in every way, at all times?

These questions apply to all types of machines and yarns used.

CONTRIBUTOR NO. 1132.

Another Method of Checking on Production and Waste.

EDITOR COTTON:

In a knitting mill, more particularly a large one, and especially a large one with a complicated assortment of different makes of machines, it is generally a difficult matter to be able to ascertain the comparative standing of so many different fixers as regards production, waste, cost, needle breakage, cost of repair parts used, etc.

This information is essentially necessary to the management, and the proper presentation of it to the fixers themselves is a big step toward securing better and more efficient work. We have developed a system here which is working to our satisfaction, and is not so very much trouble, and I am passing it along to your readers in the hope that if it is published in "Knitting Kinks," someone may find it helpful along the lines of assisting him to work out one of his own, in case he is interested in doing this.

Each day every fixer uses the fixer's daily report, which is shown at Fig. 1, for reporting the production and

FIXERS DAILY REPORT

Date.....*192*..

Style	*Yarn No.*	*Waste*	*Doz. Knit*

Needles Used.....

Section Number.....

FIG 1

waste on each style of goods. The different styles—and usually one fixer will have more than one style on his machines—are given, as well as the yarn used. The number of needles he uses on his section on that day is given in the place provided for it on the form.

The compilation of these reports is made weekly, and recorded on the large form shown at Fig. 2. This form of course can be made as long as is desired to take care of

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THE Knitting Arts Exhibition has been, for 23 years, a symbol of the progress of knitting. It has been the privilege of The Torrington Company to make needle history for over 60 years; to contribute to the art of needle making for *knitters* for some 15 years before there was a Knitting Arts Exhibition; to co-operate in advancing its efficiency by supplying needles of the first quality.

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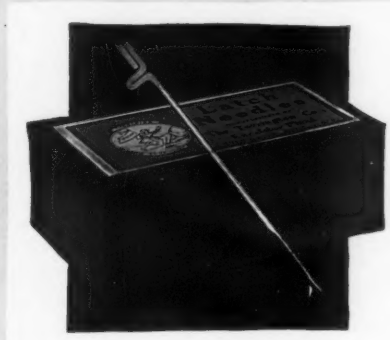

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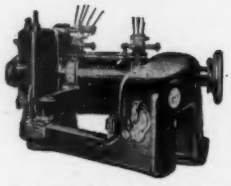
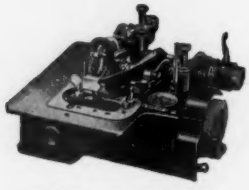
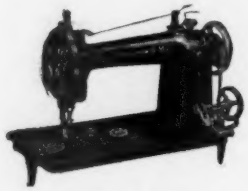


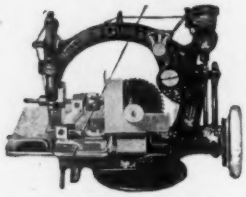
FLATLOCK MACHINE



OVERLOCK MACHINE



LOCKSTITCH MACHINE



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NAME	No Mch.	Model	Style	Production Dozens	Production Pounds	Waste Pounds	Waste Per Cent	No Needles	Doz. Per Needle	Per Doz Cost of Repairs

FIG 2

the number of fixers in the mill. The fixer's name is shown, together with the number of each model of machine he has, the styles he is working on, his production in dozens and pounds, the amount and percentage of waste, the number of needles he uses, how many dozens were secured to the needle, and the cost of the repairs he uses per dozen.

Practically all of this information is available on the daily fixer's report, or can be figured therefrom in a very short while.

Handling the proposition in this manner gives us a check in the office, and when the form, Fig. 2, is filled out and posted in the knitting room, it furnishes an incentive for every man to better the previous week's record.

CONTRIBUTOR No. 1013.

Drop Stitches on the Long Butt Needles.

EDITOR COTTON:

This is my first attempt at giving my ideas to another through the medium of the written word. I firmly believe in the exchange of ideas. For instance, you have an idea and I have one also. You give me yours and I give you mine. I have my idea plus yours which makes 2. You have likewise. 2 plus 2 equals 4. Consequently, I am herewith giving my ideas on the three questions concerning Scott & Williams Model K machines, asked by "K. T. (Ga.)" in the October issue of COTTON.

His first question is "What is the best remedy for preventing a Model K machine from making drop stitches on the long butt needles, coming off of the heel and toe?" Assuming that the needles are okeh, there is to my knowledge only one place for drop stitches to occur as the machine changes off of the heel and toe and that place is at the point where the long butt needles are lowered by the switch cam and the switch cam leveling cam. I would suggest checking up on the following things:

Have the inside of the gap closer ring perfectly smooth. Have just enough space between the bottom of the gap closer ring and its seat in the latch ring for the gap closer ring to reciprocate freely as the machine changes on and off the heel and toe. See that the inside of the latch ring, which forms a seat for the gap closer ring, is filed back at least 1/64-inch beyond the gap closer ring. This will allow the bottom of the gap closer ring to project over the latch ring a corresponding distance at this point.

If the gap closer ring is rough or grooved, if there is any space between the bottom of the gap closer ring and the latch ring, or if the latch ring projects out beneath this ring at the point where the needles are lowered by the switch cam, the end of the latches will catch on any one or more of these places, and as the long butt needles are being pulled down by the switch cam, the top of the needle is forced in toward the center of the cylinder, because the end of the latch is caught, thereby causing the latch to close as the needles go down under the switch cam. The latch is closed at this point and when the needle comes to the yarn feeding point with the latch closed, the yarn cannot enter the needle hook and the stitch already on the needle is naturally dropped.

The next question asks what causes a Model K to drop stitches in the gore, first on one side and then the other. The needles should be looked over carefully first. If the gap closer ring does not completely cover the throat plate opening, the latches can close at this point as the machine reciprocates on the heel and toe. When the elevated needles are again lowered to the knitting level the needles with the closed latches will drop the stitch then on the needle when the knitting point is reached.

The previous suggestions made in regard to the first question, concerning the smooth gap closer ring, the space between the gap closer ring and the latch ring, and the fact that the gap closer ring must project slightly over the latch ring, are applicable to drop stiches in the gore. However, these three things should be checked at the place where the down pick lowers the short butt needles to narrow the heel and toe instead of the point where the needles are lowered by the switch cam.

"K. T.'s" last question asks if anyone has trouble getting the down pick or dropper on a Model K to pull the needles evenly on both sides of the cylinder. I have had this trouble only on rare occasions. Weak or bent cylinder walls will cause this sometimes. I would also suggest having the down pick cams set so that the down pick holds the needle butts as long as possible.

CONTRIBUTOR No. 1031.

Herman Nelson Corp, Moline, Ill., manufacturers of unit heaters, Univent heaters, and invisible radiators, have appointed Charles M. Setzer Company, Charlotte, N. C., as their representatives in North and South Carolina.

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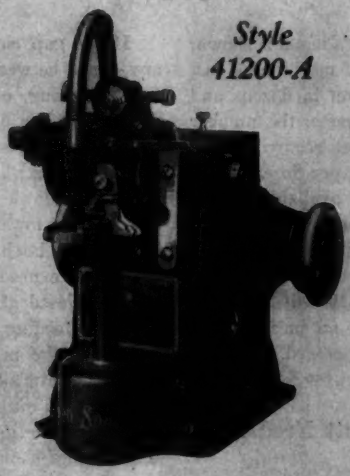
Union Special Machine

Style 41200-A



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This is the cup feed overedge machine for seaming full fashioned hosiery. It is now equipped with an improved roller clutch and is capable of turning out a greater volume of quality work.

UNION SPECIAL MACHINE COMPANY
400 North Franklin Street
CHICAGO

C3—Gray

To Prevent Yarn Hanging on the Cone.

EDITOR COTTON:

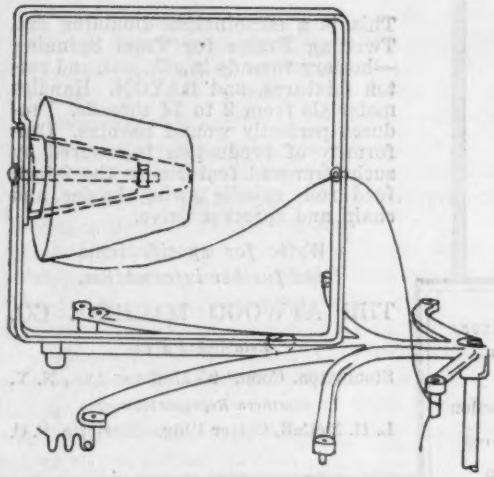
Everyone knows the various problems which have arisen as a result of the tremendous use of artificial silk and pure silk in combination with other fibers in the hosiery mills of the South. There have been troubles in treating, dyeing, cross-dyeing, plaiting, securing the proper tensions, etc., and one common difficulty experienced at first by those using these fibers has been some method of taking the yarn from the cone on the knitting machine in some way to eliminate its hanging on the bottom of the cone and breaking.

You are familiar with the different ways which have been adopted. Most of them involve the principle of a ballooner, consisting of an eyelet about four inches above the cone, through which the yarn passes on its way into the machine, giving it a tendency to balloon away from the cone itself.

The first thing used as a stand for the cone itself was, I suppose, a tin pan containing meal or rice, and others found it more to their liking to use an embroidery hoop with a piece of knitted fabric stretched in it.

I found objections to all of these methods. The meal or rice would have a tendency to collect around the bottom of the cone, due to the weight of the cone, which would also force the cone down into the knitted fabric in the other method, with the result that it would bind and hang the yarn as it came off of the bottom.

Experimenting around, I have finally adopted the stand illustrated in the accompanying sketch, which I am glad to

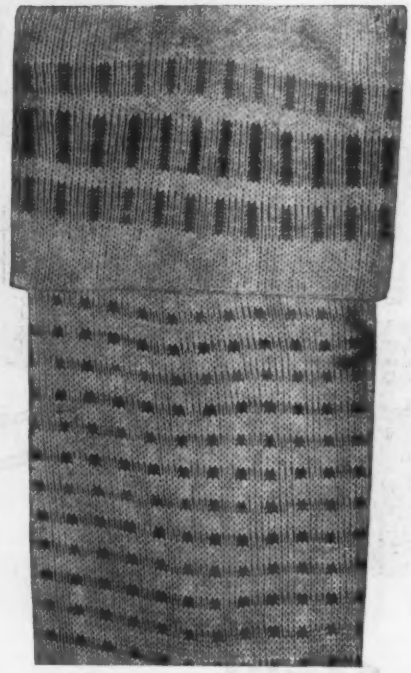


pass along to the readers of your knitting discussion department for whatever use they may care to make of it.

This is a very simple affair, consisting largely of a strip of flat iron, ⅛ by 1 inch bent into a square frame which measures 11 inches on each side. One side is fastened to the top of the yarn stand on the knitting machine, and where the ends meet on one of the vertical sides, we drill holes, and fasten here a wooden cone by means of the same bolt which holds the frame at this point. This wooden cone is for the purpose of holding the cone of yarn, and of course, while it is of the same shape, it cannot be as long.

On the other vertical side, at *A*, in line with the center

STANDARD KNITTERS



Children Want Fancy Stockings

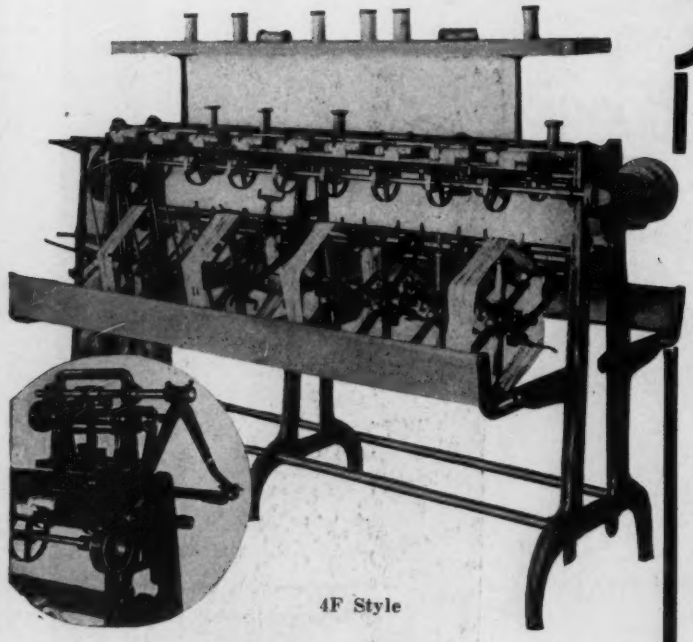
With the growing demand for fancy stockings for children the hosiery manufacturer will find a welcome place for the Standard H Machine. This knitter with the attachment "C" will produce the horizontal stripes shown in the above fabric, which is in three colors. The vertical stripes are produced by the reversed plating method, or if desired a positive method of producing vertical stripes can be substituted.

Our catalog which contains a vast amount of valuable information for the mill owner will be sent you upon request.

STANDARD-TRUMP BROS. MACHINE CO., *Wilmington, Del.*

JAMES BUILDING, CHATTANOOGA, TENN.

For Sixty Years Atwood Has Served Manufacturers of Fine Fabrics



4F Style

Over sixty years ago Atwood started a little shop that has since grown into a plant producing 80 per cent of the world's silk throwing machinery—doing business with every section of the globe. That Atwood has kept up with the times is proven by the perfection of the 4F Style Rayon Winding Machine. High and narrow and requiring only a minimum of floor space, it is adaptable to either the automatic screw traverse, or the regular patented cam Traverse with adjustable throw. The patented gear gain adjustable swifts, which have proven so efficient, are only found on this machine. These and many more exclusive features substantiate the prestige that Atwood has maintained throughout the world for so many years.

The 5B Spinner

This is a combination Doubling and Twisting Frame for Tram Spinning—hosiery threads in silk, silk and cotton mixtures, and RAYON. Handles materials from 2 to 14 threads. Produces perfectly wound bobbins. Uniformity of production is assured by such improved features as the 2-inch feed roll, spindle swing holder and chain and sprocket drive.

Write for specifications and further information.

THE ATWOOD MACHINE CO.

Established 1863

Stonington, Conn. 95 Madison Ave., N. Y.

Southern Representatives:

L. H. McCall, Cutter Bldg., Charlotte, N. C.

Built Especially To Wind RAYON

Atwood Machinery in Your Plant Means

Maximum Production
Satisfied Employees
Simple Operation
Minimum Waste
Few Repairs
Quickest Results

ATWOOD

SILK THROWING MACHINERY

of the yarn cone, we drill a hole and insert a porcelain eyelet.

This is practically self-explanatory to the mill man. I get away from the yarn hanging on the bottom of the cone, as it is pulled toward the top and furthermore it has a tendency to fall away from the cone, whereas if the cone is upright the tendency, in spite of the ballooning arrangement, is to hug the cone.

I would like to know what your readers think of this device. E. P. (TENN.)

Ornamented Knit Goods.

EDITOR COTTON:

Some sensational news is running through the knit goods market to the effect that hand painted silk and mercerized hosiery as well as knitted lingerie, underwear, etc., is being featured, and should we see reproductions of our favorite etchings, the coat-of-arms of our ancestors, favorite flowers such as roses or old time home garden types, as well as those of the fields of various parts of the country, and our period type of painting, we should not be surprised, since we are likely to see any of these reproduced on hosiery in miniature form, or in large motif for the lingerie, which we are told is promising to take the place of the hand embroidery which has found favor for some time.

These motifs are hand painted on the articles of wearing apparel, and it has been said that scarfs have also been decorated in the same way to match the hosiery, and often knitted hatbands and other knitted garments are painted in attractive tints, edged with gold.

However, the hand painted floral motifs or sprays of flowers in their natural colors, really does make a good decoration for the hosiery, scarfs and even the lingerie, knitted types of which are finding favor with both sexes at the present time in increasing numbers, particularly when reproduced on the delicate pastel shades.

Instep bouquets have also been made in medallian form to be appliqued to the hosiery and some larger sprays to be used in the same way on lingerie.

While many comments have been made upon the decorated silk and mercerized full-fashioned hosiery, little has been said of handling rayon in the same way, although one manufacturer declared that numerous handlers and consumers did not know the rayon stocking when they saw it, unless it was so stamped and that it was likely that with the increased demand for rayon which has been reported in the knitting trade, that rayon will be treated in the same way as silk and cotton.

Rumors to the effect that cotton might be making way for silk do not find any confirmation in the metropolitan area. This is particularly true where silk is produced and handled in such large quantities, and many of the operators even on fabries stoutly refuse to wear any other than silk full-fashiesd hosiery, and, in this section, the better grades are most wanted.

Some lace medallions have been produced for attaching to the black silk, which it is believed will be among the season's favorites in all grades and being produced in greater quantities than for some time, although the evening shades have been featured in decorated types also.

One "brave" young woman made her appearance on one of the mild days in a hand painted sweater of the box

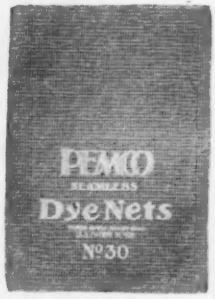
for

—Quality Dyeing
—Speedy Output

In hundreds of dye houses "Pemco" Seamless Dye Nets promote quality dyeing and speedy production by preventing goods from forming a tangled mass. They give free circulation of dye fluid. "Pemco" makes handling of goods easy, saving labor and rubbing while goods are wet and weak and eliminating seconds.

PENDLETON MFG. CO., Autun, S. C.

Strong = Seamless = Economical = No Offshades = Unusual Structure



Durable = Efficient = Dependable = Loom Made = Low Priced

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SEAMLESS DYE NETS

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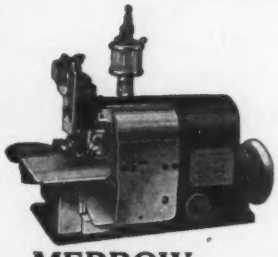
Established 1838



HIGH SPEED TRIMMING AND OVERSEAMING, OVEREDGING AND SHELL STITCH MACHINES

For use on all kinds of knitted and woven fabrics.

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Ask for details of our NEW STYLE 60ABB for simultaneously trimming and joining in a FLAT-BUTTED SEAM, the ends of cotton, woolen or silk piece goods for subsequent processes such as washing, bleaching, calendering, dyeing and printing, effecting substantial saving in labor and cloth.

Send us samples of your own fabrics to be seamed.

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DUPLAN
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Our Facilities and Experience
Are at Your Service
for

WINDING
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SIZING
COPPING
CONING
AND THROWING OF REAL SILK OR

RAYON

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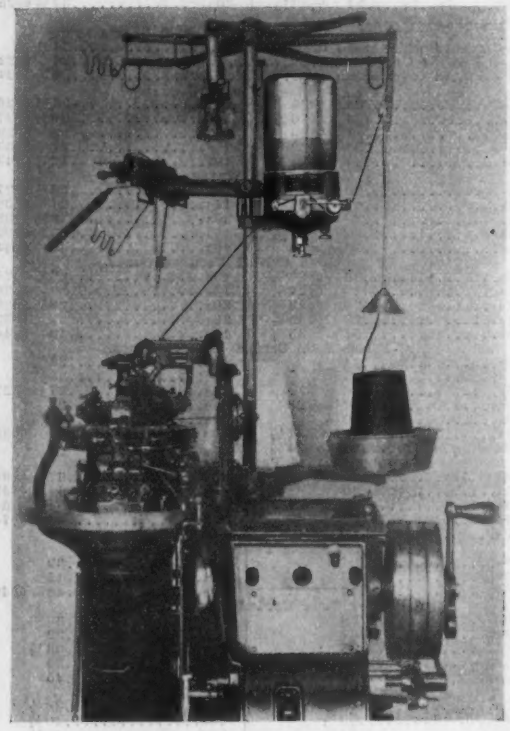
JOHNSTON BLDG., CHARLOTTE, N. C.
NEW YORK
135 MADISON AVE.
MILLS AT
HAZLETON–DORRANCETON–NANTICOKE, PA.

coat type with a contrasting colored skirt, and it was said that she made quite an impression on the ultra-fashionable and several orders had been placed for the decorated coat of this type in both the floral and photographic forms.

S. E. (N. Y.)

The Fidelity Machine Co., 3908 Frankford Ave., Philadelphia, Pa., have perfected and are distributing a new and improved device for lubricating needles on hosiery machines so the yarn will slide freely in the needle hook, which should be interesting to manufacturers using rayon and tram silk. The device, known as the Helzen lubricator, is shown in the accompanying illustration. It has been put through several years of rigid testing in middle western and southern hosiery mills.

Increased life of needles and substantial reductions in waste and seconds are claimed as the chief advantages for the lubricator. It is explained further, that oiled yarn



does not require the tension necessary on unoiled yarn to secure plaiting in the double sole and high spliced heel, which of course would reduce the liability of breaks in rayon and other yarns. Celanese yarn may be run on fancy plaiting work without tension, the oil allowing the yarn to roll freely in the bent hook needle, it is stated. Lubrication of needle latches and rivets, without streaking the fabric, can be secured, the company states, reducing waste, broken needles and rough needles.

The amount of oil applied to the yarn can be regulated and the device is provided with a substantial oil reservoir.

The American Moistening Company moved its factory to Providence, R. I., March 1st. However, it will maintain a Boston office at 79 Milk Street.

To Our Customers and All Engaged in the Textile Industry

USERS OF QUAKER CITY TEXTILE PRODUCTS, manufactured and imported by the O. F. Zurn Company and Quaker City Chemical Company for treating and finishing Silk and Artificial Silk, will surely feel gratified to know that they are using products that have been awarded the Gold Medal for general excellence, by the Sesqui-Centennial International Exposition, Philadelphia.

Your judgment in the use of our products has been vindicated. Our claims of merit have been backed by the opinion of a most competent jury.

As a non-user of Zurn or Quaker City Chemical Company products, doesn't this offer you something to think about?

This medal was awarded for general excellence of the complete line and helpful development to the textile trade over a period of forty-five years.

Isn't it just possible you might be missing something of this general excellence and the technical help we offer in the solving of the many problems arising in the treating and finishing of all kinds of knit goods in silk, cotton, wool and Rayon?

Your inquiry on any technical problem is welcome and will not obligate you in any way.

Experts in treating and finishing are at your service in the following cities:

The O. F. ZURN COMPANY
Quaker City Chemical Company
2736-38-40 North Broad Street
Philadelphia

Southern Office
1210 General Building
Knoxville, Tenn.

Canadian Plant
Birmingham St. & Whitfield Ave.
Hamilton, Ont., Canada

The Yarn Market

Philadelphia, Pa., February 14, 1927.

An almost even division of time between good and desultory business featured the Philadelphia cotton yarn market for the four-week period, ending with last week, since the last report in these columns. Two of the weeks can be given to each side, making the month a draw, with the balance of favor looking toward improvement in conditions.

A firm cotton market, bringing firmer yarn rates, the development of more direct-to-consumer selling by mills, and a higher level of prices with a reasonably good amount of sales for the month as a whole can be added to a renewed spirit of optimism as to the outlook as the important items of interest during the past month.

The first week in the period under discussion found a continued absence of what formerly were considered substantial orders, while small orders remained numerous enough to hold up the volume fairly well. The knitted trades began buying more freely than for some time, and this improvement gave them a higher rating than the weaving end as the best customers for the week. The size of their average orders also was larger. This was one of the weeks credited to the favorable side of the ledger. There was an improvement in prices all through the list, this increase being more especially noticeable in the coarser counts, under 30s. Most of the business placed was for immediate delivery, very few users committing themselves for yarns beyond the first quarter of the year. Up through this week, the anticipated pressure from spinners to get business in this market had failed to materialize, their requirements for operation apparently being provided for through the improved situation from the standpoint of the knitting consumption.

Government ginning figures announced during the second week, showing 16,000,000 bales to January 15th, produced no noticeable effect in the yarn market here, and did not reduce quotations, which has gained stability as a result of cotton's previous firmness and the attitude of the spinners. This was the first week to fail to register in the good business division. It started out with considerably less inquiry, due, possibly, to the desire of the market to digest the ginning report figures and discount them, as well as to the fact that the previous week's spurt had provided some of the requirements of the users. Furthermore, the effect of direct selling by mills to consumers, eliminating the market as a function, came especially to light during this week, but nevertheless, prices continued strong. This week ended the calendar month of January, and the price resistance throughout, in the face of the compartively small total volume of business done, seemed remarkable, it was pointed out.

The third week ushered in the month of February, and found the market maintaining an attitude of waiting, to determine accurately the developments in the cotton goods and other consuming markets. During the latter part of the week, carded hosiery yarns strengthened, but still this week as a whole was a compartively unsatisfactory one from the standpoint of transacted business. At the same time, however, price concessions were not large, and spinners continued firm, and it was felt that the activities of the direct-selling mills removed them temporarily from market competition. These facts, together with the realization that the large crop bug-a-boo was not so terribly important, produced an encouraging underlying stability.

Effects from this were found in the following week, when business improved to put the week on the good side, with prices going up to elevations as high as any experienced since November of last year. This was due also, to a certain extent, to the improved situation in cotton, which continued to grow higher and firmer until it reached new high levels of its own.

Philadelphia quotations on February 16 follow:

Single Skeins.

4s to 8s	24½ @25	10s	25 @25½
12s	25½ @26	14s	26 @26½
16s	26½ @27	20s	28 @28½
24s	31 @31½	26s	32 @32½
30s	33 @33½		

Single Warps.

8s	25½ @26	10s	26 @26½
12s	26½ @27	14s	27 @27½
16s	27½ @28	20s	28½ @29
26s	33 @33½	30s	34½ @35
40s	43½ @44		

Carpet and Upholstery Yarn in Skeins.

8s 3-4 hard white warp twist	24
8s and 9s 3-4 tinged tube	21 @22
8s 3-4 hard twist waste	20½ @21

Two-Ply Skeins.

8s	24½ @25	10s	25½ @26
12s	26 @26½	14s	26½ @27
16s	27½ @28	20s	28 @28½
24s	31 @32	26s	32½ @33
30s	34 @34½	40s	42½ @43

Two-Ply Warps.

8s	26 @26½	10s	26½ @27
12s	27 @27½	14s	27½ @28
16s	28 @28½	20s	28½ @29
24s	32 @32½	26s	33 @33½
30s	34½ @35	40s	43 @44

Frame Spun Carded Yarn on Cones.

8s	26 @26½	10s	26½ @27
12s	27 @27½	14s	27½ @28
16s	28 @28½	20s	28½ @29
24s	32 @32½	26s	33 @33½
30s	34½ @35	40s	43 @44

Frame Spun Carded Yarn on Cones.

8s	24	10s	24½
12s	25	14s	25½
16s	26	20s	27 @27½
22s	27½ @28	24s	29
26s	29½	30s	32½
40s	40½ @41½	30s double carded	33 @33½
30s tying in	31 @31½		

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	35 @36	20s	37 @38
24s	40	30s	42 @43
40s	45 @47	50s	52 @54
60s	57 @60	70s	68 @74
80s	80 @83		

Single Combed Peeler Yarn on Cones.

18s	37	24s	39
30s	42	36s	45
38s	46 @47	40s	48 @49

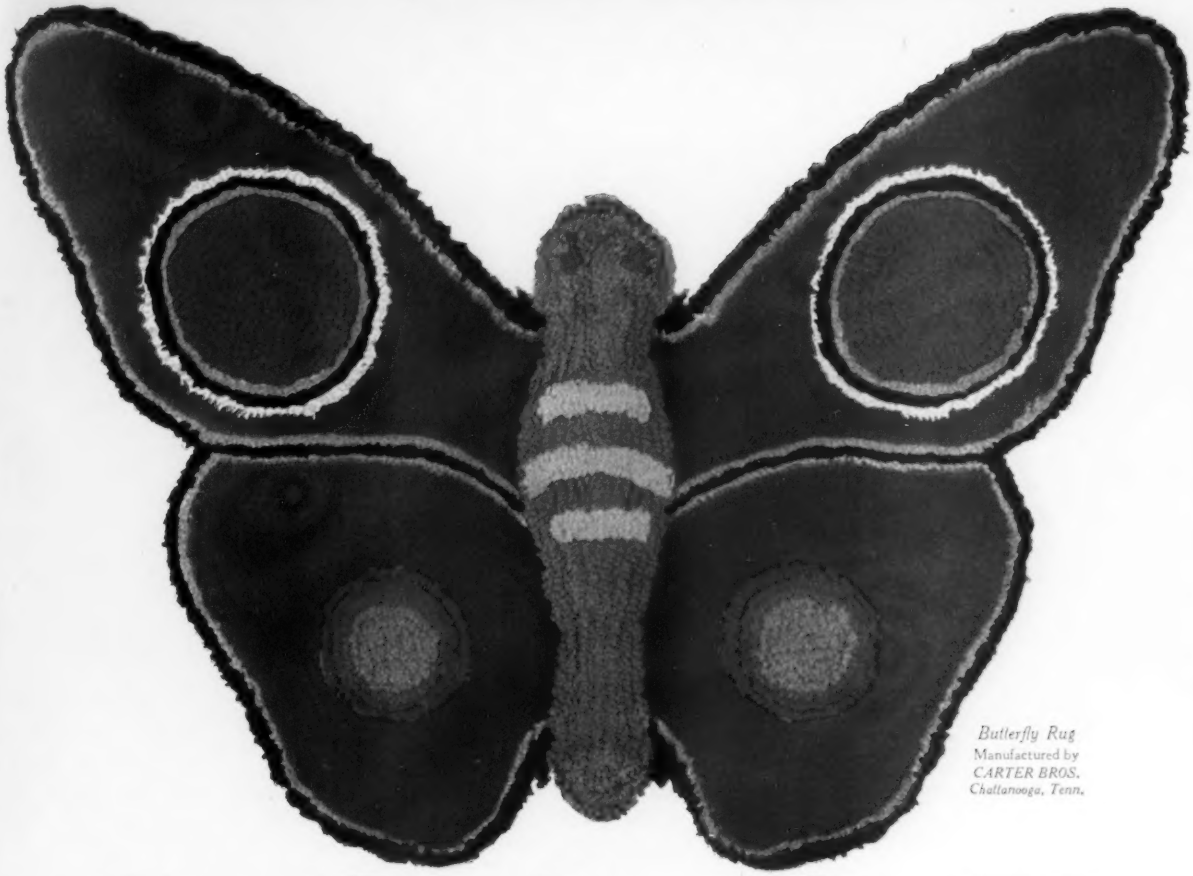
Mule Spun Carded Yarn on Cones.

10s	29	12s	30
14s	31	16s	32
18s	33	20s	33½
24s	34	26s	35
30s	36	40s	45

Mule Spun Combed Peeler Yarn on Cones.

10s	38	12s	38½
14s	39½	16s	40½
18s	41½	20s	42½
22s	43½	26s	45½
28s	46½	30s	47½
36s	50		

H. J. Forsythe, president of the Hyatt Roller Bearing Co., Newark, N. J., has announced the appointment of H. O. K. Meister as general sales manager and W. W. Scarratt as chief engineer. Mr. Meister joined the Hyatt forces more than fourteen years ago, and progressed in the organization until made assistant sales manager eighteen months ago, from which position he has recently been promoted. Mr. Scarratt, while joining the Hyatt engineering staff only a few months ago as assistant chief engineer, has had considerable experience in the design and construction of automotive, tractor, railroad and industrial equipment.



Butterfly Rug
Manufactured by
CARTER BROS.
Chattanooga, Tenn.

COLOR

-the Master Salesman

CARTER BROTHERS of Chattanooga, Tenn., have built up a splendid business in yarn-dyed washable rugs.

These rugs are of a novel, patented pile construction, providing excellent sales arguments, but the feature that gets attention and creates desire is the colors,— bright, harmonious, even, solid shades.

Franklin Process Yarn Dyeing Service has been selected as standard for this work for the following reasons: —

1.—The pressure method of dyeing assures the thorough penetration of the color so necessary in the dyeing of pile yarns.
2.—A large yarn dyeing capacity and a wide range in sizes of machines assures prompt delivery on all dyeing orders, large or small.
3.—An efficient laboratory equipment makes it possible to create new shades quickly and economically to meet the changing demands of the market.
4.—The Franklin Package is the most convenient and economical form in which to handle the yarn.

Franklin Process Service can deliver dyed yarn on parallel tubes of any standard size, on cones or on cops, thus saving the customer the cost of extra winding equipment. It can also assist in a merchandising way, not only suggesting appropriate shades and attractive combinations, but also suggesting factors in the market interested in a given product.

Can COLOR increase your sales? Let us assist you in answering this question. Mailing the coupon will not obligate you in any way. Do it NOW.

A FRANKLIN PACKAGE of dyed yarn. It will deliver freely either rotating or over end.

FRANKLIN PROCESS COMPANY

Largest Job Dyers of Yarn in America
also Yarn Spinners, Manufacturers Glazed Yarns, Dyeing Machines

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New York Office, 66 Leonard St.

SOUTHERN FRANKLIN PROCESS COMPANY
Greenville, S. C.

CENTRAL FRANKLIN PROCESS COMPANY
Chattanooga, Tenn.

FRANKLIN PROCESS

Commission Dyeing of Yarn in the Wound Form

FRANKLIN PROCESS CO.
564-C Eddy St., Providence, R. I.

The possibility of increasing sales through the use of color interests us. Please mail us the complete story or have your representative call.

Signed .....

Title .....

Name of Company .....

Street .....

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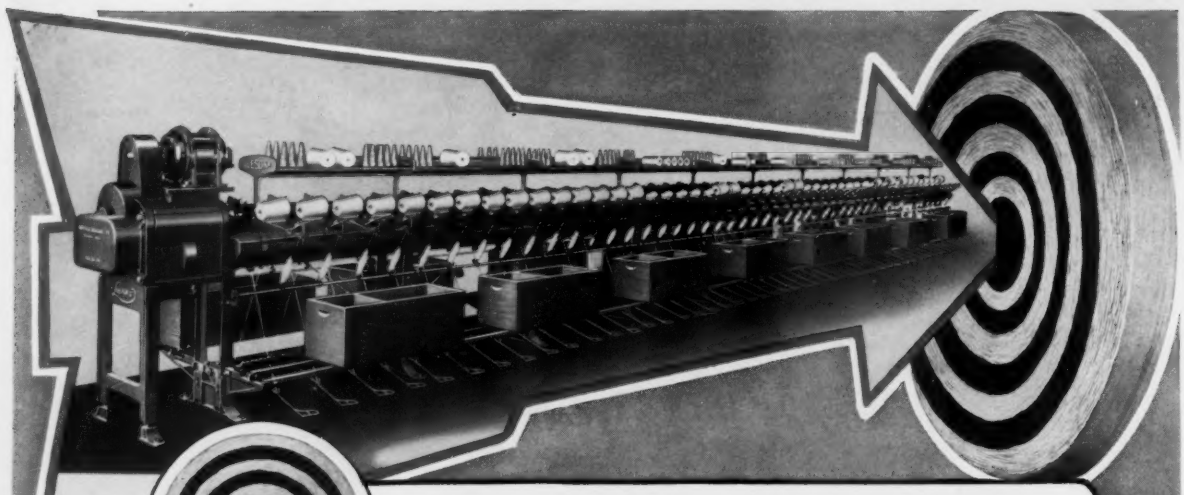
Ad. No. 224. Printed in U. S. A.



Another Bull's Eye,

No. 60 GF LEESONA UNIVERSAL WINDER

THE LEESONA TARGET

"The Solution of Every Winding Problem"

Two essentials to success in any business are a clearly defined target and an unwavering aim. A third of a century ago the Universal Winding Company established for itself, as a goal or target, "the solution of every winding problem."

Since then this Company has built over 2,000,000 winding spindles and marketed over fifty different kinds of winding machines. Many of the originals are still the only outstandingly successful mechanisms of their kind on the market.

This Company is at present the largest organization in the world making winding machines exclusively. Supremacy in size is the logical result of supremacy in demand. Supremacy in demand follows leadership in conception, execution, materials, and service.

LIKE many other Leesona products, this machine is an outstanding achievement of good marksmanship, but in its creation straight shooting has been supplanted by straight thinking, plus the highest type of technical ability and craftsmanship.

It is distinguished by high operating speed, low power consumption, exceptional durability, and uniformity of product. Because of its high speed it also naturally requires less floor space for a given production than ordinary spoolers or winders. It requires less than 3 h. p. to operate one of these machines with 98 spindles at a yarn speed of from 450 to 600 yards per minute.

This winder is particularly adapted for winding yarn onto cones for knitting, and onto parallel tubes for shipping purposes. Perhaps its most noteworthy function is the preparation of supply for the Leesona Universal magazine cone creel that is used to feed modern high-speed warpers. Its high winding speed, combined with its self-threading tension and foot start, makes it possible to obtain the greatest production at the lowest labor cost.

If you have a coning, tubing, or warping problem, this machine merits your careful investigation. You can obtain the complete story by communicating with any one of our offices. Ask a Leesona sales engineer to call, study your requirements, and make recommendations. Your request will not obligate you. Use the coupon now.

UNIVERSAL WINDING COMPANY

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Gentlemen:
Please send us information about winding
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Company ..... State .....

Ad. No. 3. Printed in U. S. A.

The Knit Goods Market

The somewhat chaotic condition which has existed in the hosiery primary markets for several months is fast yielding to demand for new goods, and improvement will be more rapid as old goods and obsolete styles are absorbed. January was a month of special sales in retail stores the country over, and necessarily dealers were buying for price. This continued during a great part of February, and in the two months more hosiery passed over the counter than it would be easy to contemplate. This clearing the market of surplus stocks proceeded in orderly fashion, but the effect of the auction of Onyx lines had been underestimated, and the prolongation of the movement of priced-down goods made for a slow, unsettled situation among many mills in both the full fashioned and seamless divisions, confined more particularly to those making women's silk lines. Recovery from the unsatisfactory conditions began early in February and became pronounced week by week, until there was little or no idleness in full fashioned establishments and less of it in the seamless field.

About the first interruption to orderly trading after the holidays was experienced with continued dumping of surprisingly large quantities of 20-inch silk boot hose at reductions amounting, in some instances, to as much as $6 a dozen. Then came announcement of the auction, which precipitated new confusion, and then the aftermath of the unusual sale and speculation as to its results. In spite of the chain of adverse circumstances, prices for standard lines of silk remained fairly steady, and later became firm as manufacturers of the better grades, conforming to demand for changes in construction, began to feel that stimulus which ordinarily precedes the placing of orders for spring.

Market recovery has been perhaps more marked in men's and juvenile lines, of which there were no alarmingly burdensome stocks, particularly of readily marketable novelties, and it appears that even now a number of manufacturers of low price cotton half hose are in a position in which they find it expedient to decline some orders tempting as to size. An offer of $1.32 ½ for mercerized half hose in the gray was not accepted by either of four southern mills, two holding for $1.35 and the others reporting "sold up tight."

The strictly speaking Easter business in women's silk hosiery will have its big development in March. Easter this year will fall on a later date than in any year, with five exceptions, since 1900. This is one explanation for later buying by retailers. Another was the uncertainty as to construction, whether chiffons or medium weight and the question as to all-over silk and silk to welt. Here were problems which left buyers in a state of confusion, and early orders were on an ultra-conservative basis. Furthermore, a few mill lines of novelty hose were shown, and in the minds of some interests there existed fear that there might be created a demand for fancy construction. Doubt in this respect seems to have been pretty well dispelled. so far as relates to silk, while there is a possibility of an outlet for clocked and otherwise ornamented fine gauge lisle. But the prospect of lessened use of plain colors in silk seems more than remote.

Finer than usual gauge of full fashioned silk will be more extensively worn, with production confined to a comparatively few mills and sales restricted, generally, to metropolitan shops and department stores. The sheerest stocking to date is the 2-thread 57 gauge from the Propper Silk Hosiery Mills, which made its appearance in some of the exclusive shops early in February, in response to the complaint of such establishments, "we cannot get hosiery sheer enough to suit our trade." Another mill selling direct to retailers has brought out a dip dyed 3-thread 45 gauge stocking, and a few are busily engaged with 5-thread of 45 gauge. The volume production is in 42 gauge, divided among chiffons and medium weight, of seven and eight thread.

It seems a safe assertion that the better situation as to all-around business is among the 42 gauge mills, this applying to the small as well as the large, and most of the plants installed last year, and which obviously had to establish their trade, are on capacity production basis and shipping their output. One might be instanced which around mid-January was confronted with the necessity for a shutdown, has since sold 50 per cent of its production to the end of the year and the remainder to July, besides declining an order for 8-thread in the gray and reducing stock from a few thousand dozens to less than three cases. This may be an isolated case of quick recovery, but is representative of the improvement in a number of mills. Another, operating four days a week, now is running every machine full time and selling production.

Dissatisfaction of manufacturers with the alleged dilatory tactics of jobbers is indicated in changes in the selling policies of not a few mills in both the full fashioned and seamless divisions. For example, the Arteraft Silk Hosiery Mills, full fashioned, Philadelphia, recently established a retail store in the fashionable shopping center of the city, and employed solicitors who visit homes and have the goods delivered from the store. It is intimated the owners will open additional stores.

The Starr Knitting Mills, spring needle silk and silk in combination with rayon, formerly selling to jobbers, is advertising to customers and circularizing homes in sections of New Jersey. The company is offering a medium weight pure thread silk stocking, presumably of 260 needles, at 75 cents a pair, or three pairs for $2. Chiffon hosiery, presumably containing some rayon, is listed at 60 cents, three pairs for $1.50.

The Alart Hosiery Co., Philadelphia, is operating a retail store under the title Priscilla Shop and circularizing consumers, instead of employing canvassers. The company announces a cut in prices.

Eliminating the construction features and novelties as factors in the near future market situation, there remains the question whether consumer demand generally will suffer from wholesale dumping through retailers' special sales in the last two months, and stocks that still linger. There was under consideration a few weeks ago the formation of a syndicate to take over around 9000 dozen pairs of full fashioned silk bought by speculators at the auction in New York in January. More than 30 per cent of the lot was made up of 20 inch pure thread silk boot goods, the remainder being divided as between all-over silk and silk to welt, the whole being offered at approximately 35 per cent under what were mill prices. It is understood several

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such syndicates may be organized, with a view to merchandising excess holdover goods in orderly fashion and causing minimum disturbance to the regular markets.

With eyes focussed on one dollar as a popular price for a pair of silk hose for women, several Philadelphia manufacturers will, in all probability, put on the market a line of full fashioned of silk and rayon in twist, to be sold to chain stores and large retailers, and it is intimated additional chains will be established by a manufacturer or two for exploiting dollar full fashioned in one form or another. A manufacturer of women's seamless in Camden, N. J., is installing footers, intending to increase the production of the form fashioned—a full fashioned foot on a seamless knit leg, a type of construction that is keeping a few large mills busily engaged throughout the year. All of which is promising of sharper competition to be met by the seamless, and raising the question whether prices of the medium grade staples may not have to undergo some slight revision.

Two manufacturers of seamless hose operating spring needle machines and putting their output across chain store counters at a dollar a pair purpose a change in the dials, for knitting 300 needle goods. Another quite recently brought out a 280 needle dollar stocking, knitted on a 3½ inch dial, which is claimed to be as acceptable as a 300 needle knitted on a 3¾ inch head. High grade seamless hose for women shows a comfortable margin of profit for retailers, and perhaps this accounts for the fact mills are having a better demand for their product, particularly in the finer gauge. A silk and rayon to welt, of hefty fabric, is available as a profitable 75 per cent seller.

The lower production cost of silk and silk-and-rayon hosiery will, logically, it is believed by market factors, make for a more limited use of the all-rayon, especially during the next few months, when, it is maintained, the all-silk and silk in mixture should have a seasonal gain. Rayon commission houses report manufacturers buying the raw material very conservatively. It is stated in the trade they are more concerned with the near future of the rayon stocking than with prices for rayon yarn. Fear of further price reductions in rayon has vanished, the rayon dealers say, although there is some question whether increasing imports may not have a disturbing influence.

Lessened use of rayon for women's hosiery probably is offset largely by increase in the extent to which it is employed for men's fancy half hose and children's hose. Certain it is that there never was shown so wide a range in men's novelties, in the construction of which rayon is a convenience in the obtaining of colors, to say nothing of its desirability for plaiting and giving a classy appearance to a comparatively low cost sock. While diversification of colors and patterns makes for a lively market, there are scores of manufacturers who, having had unpleasant experiences with novelty half hose, would welcome a return to plain colors. But they probably would be little better off, judging from the slow movement of silk socks and the low prices at which they are obtainable.

One of the better known Philadelphia department stores quite recently was selling McCallum full fashioned plain color silk half hose at 85 cents a pair, comparing with 65 for fancy lisle. Even lower prices for full fashioned silk were noted following the wholesale outpouring of Onyx brand socks, but these figures were for a few days sale, while in the case of the McCallum line they were

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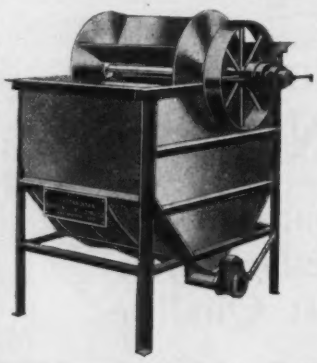

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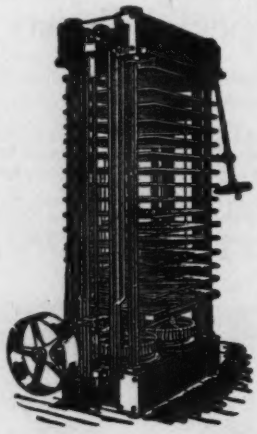

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regularly priced, for regulars. One way to increase the use of plain color silk socks is to present a wider range of colors, is the opinion of a leading manufacturer, who said he was not being carried away by enthusiasm over the business in novelties, in which his mill is one of the more important factors. It was believed by some that clocked silk half hose would find a ready market, but these same interests now say clocks do not appear promising of winning additional favor.

In half hose, fancies have the right of way for the coming season, and leaving out of consideration several direct-to-retailer mills specializing in patterns, the bulk probably will come from mills in the South and interior Pennsylvania. The May Hosiery Mills, Burlington N. C., recently brought out a jacquard sock in three colors to go over the counter at a half dollar a pair, which is the price at which probably 75 per cent of the novelty socks are sold in retail stores. Another southern mill a few weeks ago made first showing of samples of a line of women's jacquard hose, of rayon and cotton, intended as a dollar a pair proposition. Dimming the prospect of any great furore over fancy hose for women is the fact they proved a serious disappointment for many mills and dealers two years ago and that only recently there was an unloading of a variety of novelties at a third of the regular prices. However, consumers, of the fickle sex, are yet to be heard from.

The market for juvenile fancy hose has had quite an uplift during the generally slow period, and for current use the full length leg, plain and fancy, seemed to be receiving preference. It was believed, however, that with the nearer approach to spring and outdoor life the misses seven-eighth sports hose would have a comfortable lead. A change of seasons was all that was needed to inject new life in to the market for juvenile hosiery. Boys' golf hose will be a profitable item this year, and there is a good outlook for lines intended to go over the counter for a half dollar. One such line comes from a mill in the Reading territory. It is of 176 needle construction.

Low end cotton half hose priced to jobbers at anywhere from 65 to 87½ cents a dozen, the latter figures applying to cuff top and looped toe goods, is holding with comparative firmness, and current shipments indicate a good stage of distribution. Equally stable are misses 28 ounce ribs, at around 90 cents for size 7, rise and fall five cents a dozen. The strong item in infants socks is of rayon, and the market has materially improved on a steady flow of repeat orders, principally from jobbers who had underbought for normal requirements rather than attributable to to any unexpected spurt in retailer commitments.

Comparing with a year ago, there is indicated little change in volume of production of all classes of hosiery, although there is shown an increase in shipments. Output and shipments are more evenly balanced, and it appears the stage is set for a healthy and fairly brisk spring, summer and fall season.

Underwear.

Underwear prices and conditions, present and prospective, in the markets for raw materials can be eliminated as factors in the unsatisfactory situation as to men's heavy weight cotton ribs. Trade analysts will have to look elsewhere for an explanation for the attitude of distributors toward underwear at the lowest prices in years. Buyers flocked to New York for the January annual meeting of the

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National Wholesale Dry Goods Association. Their coming to the central primary market had been looked forward to by manufacturers as a buying start. They came and went and after the usual appeal for manufacturer co-operation and an expressed satisfaction with prices they left contracting for a later period. Road salesmen for numbers of mills followed, but to late February there was comparatively little buying. Some manufacturers said they could not recall a January and February when jobbers bought heavy weights so sparingly.

It is maintained by some, and seemingly with good ground, that mills making women's cotton ribbed underwear are in a far better position with respect to business on the books and the outlook for nearby further commitments, than those engaged exclusively with men's heavy weights, this notwithstanding the oft repeated prophesy that the cotton garments for women were fast nearing obsolescence, under pressure of the silk and rayon. "One difficulty with the profitable merchandising of women's cotton underwear," said the underwear department manager of one of the better known northern retail establishments, "is that good garments are not available for a popular price."

This person probably makes comparison of fine gauge 80/2 mercerized union suits with mediocre rayon. What might be a popular price for one would not look well with that of the other. The fact remains that a better cotton union suit is to be had for one dollar than rayon bloomers at $1.50—better in appearance after a laundering or two and certain to give longer and more satisfactory service, and this is believed to be coming home to women who have yet to be convinced that silk or rayon are essential as a badge of social standing or conducive to greater comfort.

Cotton underwear is at a disadvantage in competition in that it is not so extensively advertised as are the silky garments. Classy specialty shops exploit silk and rayon to the point of exclusion, almost, of cotton, lest they affront their select trade. The lustrous is exploited, while the cotton is left to make its own appeal. And yet most manufacturers of women's cotton underwear in the Schuylkill Valley, which is to Pennsylvania what the Mohawk Valley is to New York, have this year taken a much greater volume of business than in recent years to corresponding date. Orders, while in the main late, were placed earlier than in 1926, and for larger quantities. Statements to this effect come from scattered mills up the Valley. A few have increased their output, and a mill here and there that was idle has resumed operations. Practically all are shipping out light weight union suits as fast as they can be furnished, and an encouraging amount of business in medium weights has been booked.

A 5000 dozen order came to a leading upstate manufacturer. This was his largest single order in years. Jobbers are contracting for medium weights for deliveries in October, and are committing themselves for more, relatively, than the quantities of men's heavy weights that have been contracted for. Activity in men's winter garments is in the future, and not distant. Doubtless it is the fault of some over zealous manufacturers that jobbers have deferred.

Manufacturers made prices safe for early operating by guaranteeing price protection, so far as related to their own lines, but none could appropriately bind himself to meet the price of some competitor. Jobbers were advised by more than one mill that it owned cotton bought at the lowest price for the current fiscal year. But, it is asserted, and not specifically denied, that subsequently a manufacturer who had so advised announced a downward revision, which a jobber would say, left the inference the original quotation was not as low as the cotton cost suggested it might have been, and the further inference that other reductions might follow if buyers were not in a great hurry to place orders. So the business continued to lag at a time when buying ought to have been on in real earnest.

Prospects Seem Better.

There has been a fair amount of contracting, by leading jobbers in sections where deliveries must be made early, but the business appears to be not well distributed as between the mills North and South or as among those in either section. For example, a manufacturer in the South reports substantial bookings by his trade generally, while another seems at a loss as to why his customers of last year are so slow to make commitments this year. A few have bought as heavily as in 1926 to date, he says, while most of those who have operated contracted for less, and the majority have bought nothing. The two manufacturers referred to are representative of their respective classes, and the experience of each seems typical of that of others in the same classes. A no less variable situation is found among mills in New York State and the Central West. The aggregate business of the heavy weight manufacturers as a whole is much below the volume of the first two months of preceding years.

With prolongation of the inactivity it became more apparent, say some factors, that wholesalers look for no early buying by the retail trade and purpose regulating their commitments accordingly, with the prospect of eventual severe pressure on mills for deliveries, unless manufacturers elect to carry stocks for extending to jobbers the same accommodation provided for retailers buying direct from mills. Jobbers reason that as cotton is not likely to decline in market value the manufacturers would be safe in putting goods into stock. But the jobber it not willing to pay for this accommodation. It seems a 50-50 proposition whether mills operate only on orders and make profitable a market, or for stock and little profit on volume. In view of the price revisions to date it would appear that it is the buyers' next move.

While, it appears, the bulk of the business in knitted light weights for men has been placed, there still is much buying to be done. That stocks are low, as to certain popular lines, at least, was evidenced by the number of February orders for one or two case lots for tiding over until deliveries be made against contracts. Such orders disclosed an unreadiness of some manufacturers to supply spot goods. The underwear called for was of types coming to be worn all year, in lieu of heavy weights. Retailers may not have been buying for their spring and summer needs, but they were in a hurry for goods for immediate, and it is expected a similar situation will develop by early fall in winter ribs.

Men's knitted light weight cottons may have to meet keener competition than has existed, for rayon union suits are reported coming into more general use, along with woven drawers to be worn with knitted shirts. But (this ought to be said in a whisper) men's stepins, a mere running trunk on a sleeveless body, are being pushed to the front on underwear counters in some of the classy shops. Then, too, there is the dainty sateen drawer, which not

over-fastidious men may have the temerity to wear with a rayon striped knitted shirt. Some observers of style changes in men's underwear say they will not be surprised to soon see men's specialty shops displaying compacts and all the other accessories for dolling up in public after the manner of womankind.

A whirlwind competition in men's nainsook athletic suits is being waged by jobbers, as an outcome of distribution zoning by the B. V. D. Co. and the elimination of numbers of distributors for centralizing the merchandising. This has resulted in the eliminated jobbers put ting their own brands on the market and pushing them vigorously, so that now there are more mill lines of nainsooks to go into the hole formerly filled by B. V. D.'s, which may mean, possibly, an approach, for the time, of more nearly destructive competition for the unidentified knitted.

Sweaters.

After a long and vexing wait for business in fall sweaters, manufacturers are seeing a ray of light over the clouded horizon. They have paid the penalty for a premature opening, and some still are paying, either in having no orders of moment or in business which was taken after prices had been revised. In one instance, according to seemingly trustworthy report, a line of sport coats was reduced to $21.50 from $24 a dozen, the mill having gotten its price down to dangerously near cost of production, it is maintained. There are reports of other recessions, and whether true or untrue, the effect is the same, in precipitating confusion that was unlooked for.

The sweater coat as a commodity is in better standing than a year ago, and there is reason for believing mills which can be adapted to getting off a nine months production in six months will have better than the 1926 volume of business. Spring business in women's sweaters has not developed as strongly as was looked for when some mills became fairly well supplied with orders. Buying for spring started reasonably early. Latterly buyers showed less interest, probably on reports of disappointment with the business taken by retailers at the winter resorts. Manufacturers generally are well satisfied with the outlook as to men's coats.

A shaker coat put on the market quite recently has a shawl collar running into a lapel with the a "V". This permits the collar being worn as a full turndown, a button up roll or drawn to its full length for giving the neck maximum protection, being well adapted to either of the three positions. Shakers have the earmarks of a staple among staples. In fact, there appears more confidence in staples than in the dizzy designs. Sports coats on the conservative side will be popular, no doubt, as well as novelties in which there is an avoidance of the extreme. In an all-around way, the market has gone through its worst for the current year, according to all indications as they appear to manufacturers and mill agents, with jobbers still disposed to trade ultra cautiously, however.

"Rolling the Problems Out of Transmission," is the title of a new booklet just issued by the Diamond Chain & Manufacturing Company, of Indianapolis.

The application of roller chains for the transmission of power in the industrial field is the subject of discussion in this booklet. It also contains many illustrations showing the variety of ways in which Diamond roller chains are being applied.

A New Selling Kink.

Women's full fashioned silk hosiery is being sold to retailers through a New York agency in sets of three stockings instead of pairs, by the Doylestown Full Fashioned Silk Silk Hosiery Co., at Doylestown, Pa., and the mill, operating six 16 section 42 gauge leggers and a complement of footers, maintains a sold-up-tight condition, while the agency is reported looking for an additional source of supply, it is stated. The idea of sets of three stockings originated with J. Casin & Co., New York, the agents for the mill, who felt there was need for a stocking to be always in reserve for emergencies due to runners or damage. Milady is supposed to never venture out without a spare stocking tucked away in her handbag—its like the spare wheel, and tire inflated, on the rear of an automobile. If something goes wrong with one of the pair of hose she is wearing, she simply slips into a dressing room and substitutes the spare one, and later sends the damaged stocking to some repair shop where runners are eliminated and mending done.

The plan is said by other manufacturers to be feasible, provided the three stockings always be laundered at the same time, as otherwise there will be likelihood of slight changes in shade, for, it is pointed out, that usually occurs with every laundering to which hose is subjected. Hence when stockings that have been worn are laundered, the odd one not in actual use must go through the same process.

The hose is sold to retailers at $16 per dozen sets of three stockings. They are chiffons, silk to welt. It will sometimes occur that with a pair and a half, milady will get about as much service as she might with two pairs, assuming she had bad luck with one in each pair.

An Educational Chart on Underwear.

What is interpreted to be a further move toward standardization of knit underwear, which effort is approved by both manufacturers and retailers, is the announcement just made by the Merchandising-Advertising Department of the Knit Underwear Industry that it is now working on a wall chart designed to show the models generally used throughout the industry, giving a description of the various weights, telling the fibers from which the garments are made and giving the size range.

The chart will be used for instruction purposes in personnel departments of retail establishments and home economies divisions of colleges and schools. Its main object is to give salespeople and students a general conception of the models available. Another purpose is to educate retail merchants—and, through them, the consumers—to the use of names selected by the industry to designate different type garments, such as Knit-Athletic, Semiletic and Knitgard.

Models shown on the chart will be representative of the entire industry, the choice of the garments to be used being left to the manufacturers themselves, who will supply the information in a questionnaire being sent the trade. The chart will measure 16 x 24 inches.

A booklet discussing the physical properties of aluminum paint and its uses in modern industry has been prepared and is being distributed by the Aluminum Company of America, Pittsburgh, Pa. Copies may be secured upon request.